Evaluation Report of NIH K-12 Program

Title: Evaluation Report for the NIH4 Module, *The Science of Energy Balance*

Date: 2002

Description:
This report evaluates one component within the NIH K-12 program, the NIH Curriculum Supplements. The NIH Curriculum Supplements are K-12 teacher's guides to two weeks' of lessons that explore the science behind current health topics. The modules are sent free of charge upon request to educators across the United States. Over 50,000 educators have one or more curriculum supplement.

This study specifically examines the results of the field tests conducted during the development of:

The Science of Energy Balance (Grades 7 – 8)

This study was designed to determine the effectiveness of the module as a supplementary addition in the K-12 science curriculum. The field test sites were selected from volunteers who were chosen to maximize inclusion of various races, ethnicities, and geographic regions. The evaluation consisted of a field test with close-to-complete instructional materials. The surveys measured student knowledge using a pre/post test. The teachers also commented on the effectiveness of the lessons and their implementation. These resulted were used to identify strengths that were highlighted and weaknesses that were corrected in the final draft. The teachers' comments were included in the final draft as "tips from teachers" on specific lessons.

Evaluation Report
for the
NIH4 Module:
The Science of Energy Balance: Nutrition and Physical Activity

BSCS Evaluation Report ER 2002-03 May

Theodore A. Lamb
Research & Evaluation Division
Biological Science Curriculum Studies
5415 Mark Dabling Blvd.
Colorado Springs, CO 80918-3842
719.531.5550

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For copies please email: researchandevaluation@bscs.org

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Section I. Executive Summary

BSCS developed a learning module on "The Science of Energy Balance: Nutrition and Physical Activity" funded by a grant from the National Institutes of Health. This module was one of three funded by the grant. The evaluation study was designed to determine its effectiveness as supplementary material for middle school instructional materials. The sites were selected from volunteers who were selected to maximize inclusion of different races, ethnicities, geographic regions, and urban-suburban-rural schools.

There were eight schools in the study. The teachers received a field test orientation at BSCS and were paid to be in the study. A group of secondary teachers received no orientation or funding but were interested in participating. We intended to include them in the analysis, however, no evaluation materials were returned by the secondary sites. There were 440 students and 8 teachers in the study.

The Formative Evaluation consisted of a field test with the instructional materials. Students and teachers completed evaluation questionnaires after using the materials in March, 2002. It is suggested that the developers review Tables 65-70 on pages 44-49 which are brief "Formative Evaluation Snapshots" of each lesson, then examine the percentage calculations in Tables 3-62. Lastly, the comments by students and teachers on the Pre-Lesson and Lessons 1-5, in their totality, are in Appendix I for the students and Appendix J for the teachers. This process should reveal fertile areas for improvements to the module. Appendices I and J also include comments to questions on the Most and Least Valuable Aspects of the Module and Suggestions for Improvement to the Module.

The Summative Evaluation consisted of pretest and posttest results from administration of Student Knowledge Surveys. Before using the materials the students took a Knowledge Survey and then the same survey again after completing the materials. The t-test and one-way analysis of variance results suggest statistically significant differences in the increases from pretest to posttest scores. In addition, the teachers responded to questions about the success of the materials in achieving the learning outcomes. These results indicated high agreement with statements on the effectiveness of the module in achieving the established learning outcomes for each lesson. A response category of “Not Sure” which was available to students to indicate total lack of knowledge and blatant uncertainty was also examined and yielded a significant reduction in frequency from pretest to posttest knowledge surveys.

The final sections briefly discuss the results and recommendations for the developers. Recommendations include:

- paying the secondary site teachers a nominal honorarium to return materials in a timely fashion,
- adding more time in future proposals for evaluation data entry, analysis and report writing,
- a local pilot test, and
- tailoring future proposals to include modifications to enable access by persons with disabilities.

Section II. Background Information Concerning the Program

A. Background and Goals of the Program

"The Science of Energy Balance: Nutrition and Physical Activity" is one of three modules created with funding from a grant from the National Institutes of Health (NIH). This module is sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) which is part of the NIH.

The final product will be an instructional module composed of four lessons which are designed to be taught in sequence for approximately a week. It is intended to be a replacement for a part of a standard curriculum in middle school. The module is designed to help students achieve the following goals associated with scientific literacy:

- understand a set of basic scientific principles related to the nature of energy balance and the relationship of energy balance to human health;
- experience the process of scientific inquiry and develop an enhanced understanding of the nature and methods of science, and;
- recognize the role of science in society and the relationship between basic science and human health.

B. The Curriculum Development Process.

BSCS uses a curriculum development process that involves an advisory board, an external design team, and an internal writing team. In the Initial Phase, an Advisory Board meeting of experts in the field is convened at the beginning of the development process to identify the key or critical areas of study in the field as well as the key concepts to be conveyed in the materials. Resources are also sought from the Advisory Board. Next, in the Content Review Phase, an external design team of subject matter experts and teachers at the appropriate grade level is brought together for several days of brainstorming and writing. This team, with the input of the Advisory Board, designs the activities and addresses options for structuring the materials. Some writing may be done but that is not the major objective. The Materials Development Phase is next. After input is gained from the Advisory Board and the external Design Team, the BSCS curriculum developers begin the serious task of putting structure and form to the materials and various activities. We then have a Field Test Phase in which the materials are tested with a national sample. The Evaluation Phase consists of analyzing and reporting the results of the Field Test. This is followed by the Final Production Phase in which the materials are modified with the suggestions from the formative and summative evaluation findings and the final curriculum materials are produced.

In order to facilitate the work of the Advisory Board and the external Design Team we developed and administered an Advisory Board Evaluation Form (Appendix A) and a Design Conference Evaluation form (Appendix B). No analysis was performed on the responses generated with these forms. They simply provided input to the project director about how well the meetings went and what modifications to consider for future meetings.

C.. The Instructional Materials in the Module

The final product is suitable for use with any middle school biology program. There is one Pre-Lesson and five lessons:

1. Pre-Lesson: A Physical Activity Diary
2. Lesson 1: Burning It Up
3. Lesson 2: A Serving by Any Other Name
4. Lesson 3: A Delicate Balance
5. Lesson 4: Munching Mice
6. Lesson 5: Dear Me

Each lesson contains readings and activities. There is a website for resources and activities. Additionally, there are Teacher Support Materials to increase the ability of the teachers to use the materials effectively in the classroom.

The materials are designed to incorporate an inquiry-based approach, the 5E model: Engage, Explore, Explain, Elaborate, and Evaluate.

D. Teachers, Students, and Test Sites

Primary Field Test Teachers. Field test teachers were recruited by several methods, including an advertisement placed at the BSCS website, letters of invitation to teachers who had participated in previous BSCS field tests, a notice in the BSCS newsletter, and an ad in The American Biology Teacher published by the National Association of Biology Teachers (NABT). We asked interested teachers to complete a teacher background survey to determine their level of interest and commitment and whether they would be teaching appropriate classes during the test period. The background surveys were reviewed by the project director and staff biologist, selected the participants, and then contacted the teachers to see if they still wanted to participate in the study. One essential criterion was whether or not the teacher had the necessary computer resources available. Additionally, even though by using volunteers we would never have a truly representative sample of schools or school districts, the staff made a concerted attempt to assure inclusion in the selection process by selecting schools that had diverse student populations and represented a variety of economic and geographic contexts.

In January, 2002, the eight selected teachers were brought to BSCS for a 2-day Field Test Orientation. During the orientation the staff introduced the teachers to the key features of the science content and specific activities of the module. The project supported all travel expenses and the participants received an honorarium of $300.00. After they used the module and BSCS had received the evaluation materials they received an additional honorarium of $400.00.

Secondary Field Test Teachers. There were more teachers who wanted to be in the field test than we had resources to accommodate. In these cases we sent the materials to the teachers and asked that they use them according to the guidelines in the Teacher Background Materials. These teachers did not receive honoraria and did not participate in a field test orientation, however. We thought this was an additional useful test of the materials which perhaps more accurately portrayed how they would be used by most teachers. Unfortunately, no evaluation materials were returned from the secondary sites.

Students in the Field Test. The students at the primary test sites ranged from 6th to 8th graders in middle school. There were 8 primary test schools in the study from school districts in Illinois, Vermont, Maryland, West Virginia, Arizona, and Oregon. Figure 1 depicts the dispersed locations of the primary field test sites nationally.

Tables 1 and 2 depict the demographic information for the schools in the field test with approximate breakdowns of race/ethnicity using U.S. Census Bureau categories. These data come from the responses given by the students.

Table 1. Population Characteristics of Primary Schools in the Field Test

School	% Asian	% Afr Am	% Am Ind	% White	% Nat Hw	% other (Hisp)	% 2 or more
Cheyenne-Cavaliere	2.2	2.2	2.2	58.7	2.2	26.1	6.5
Beckley Stratton	6.7	17.8	2.2	53.3	2.2	2.2	15.6
Gilman MS	1.9	0	1.9	94.4	0	0	1.9
Stone Academy	16.9	15.5	1.4	25.4	0	22.5	18.3
Washington Irving	0	49.0	2.0	2.0	0	35.3	11.8
Pyle MS	12.4	.9	0	71.7	0	6.2	8.8
Cheyenne - Haws	12.5	16.7	0	37.5	0	20.8	12.5
Whitford MS	0	3.0	0	72.7	0	3.0	21.2

Table 2. Another depiction of the Population Characteristics of the Primary Field Test Sites

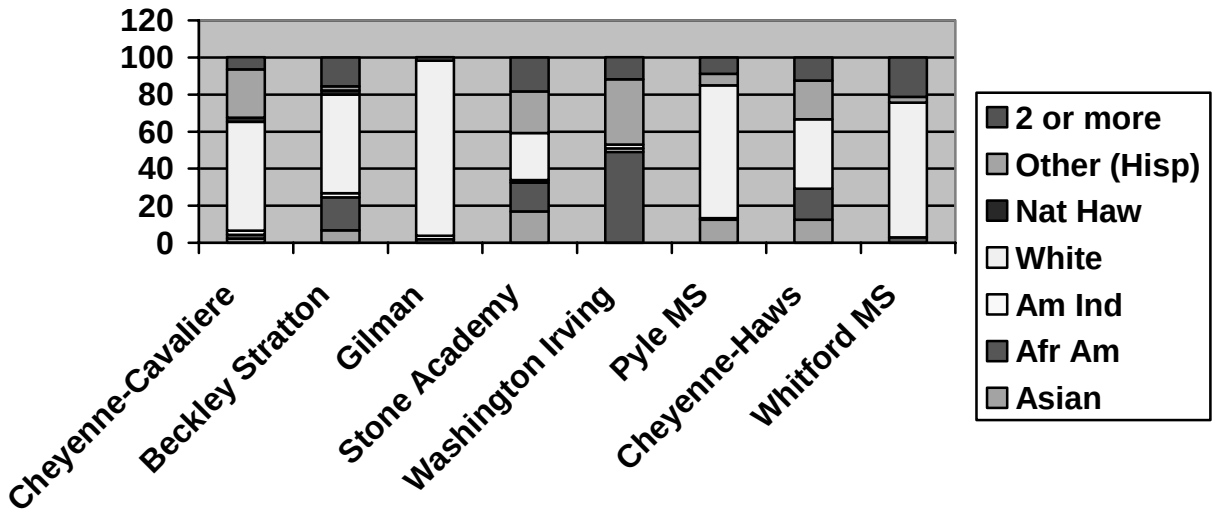
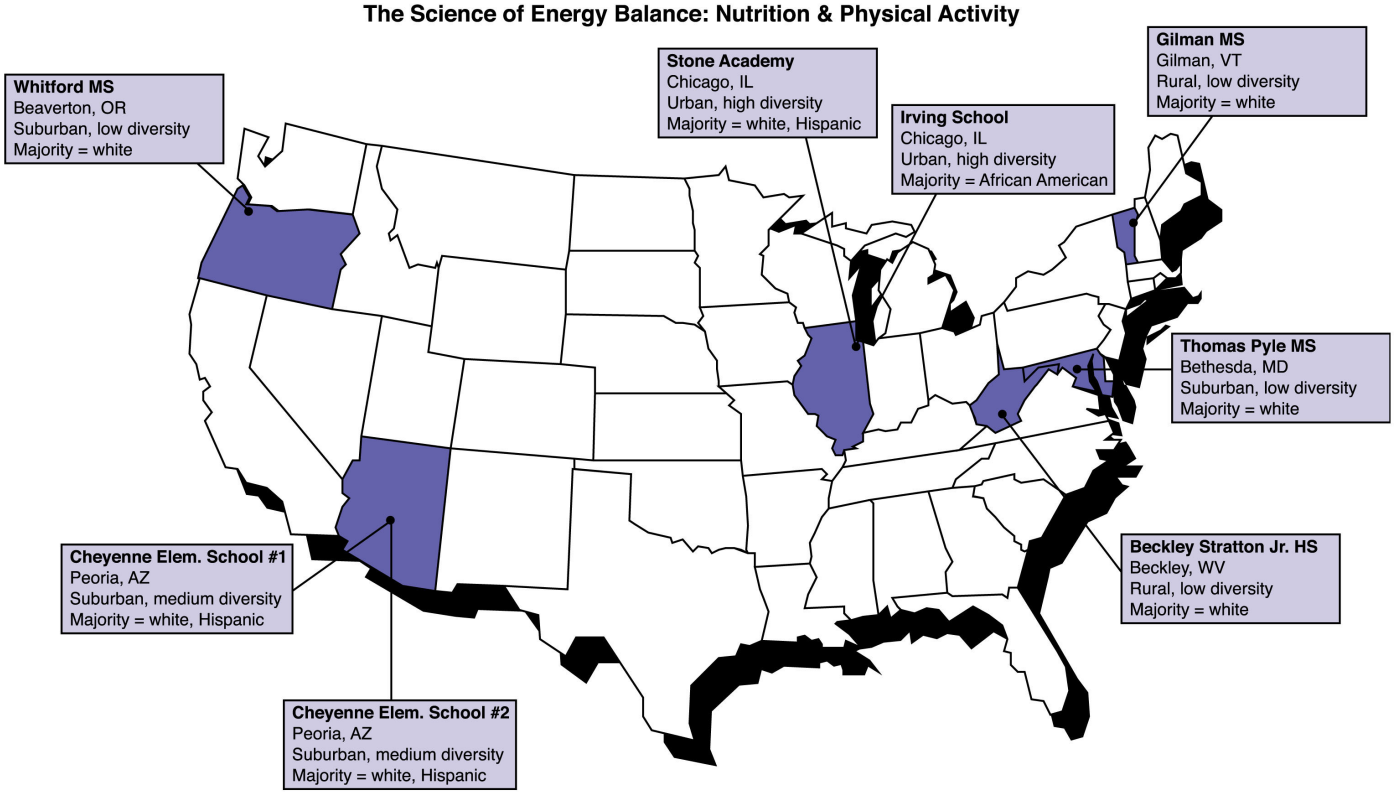


Figure 1: Primary Field Test Sites for
The Science of Energy Balance: Nutrition & Physical Activity



Section III. Description of the Evaluation Study

A. Purposes of the Evaluation

The evaluation had two primary purposes. The first is to gather formative evaluation data about the functionality and usability of the materials. The curriculum developers use formative evaluation findings to revise and improve the final version of the module. The second is to gather preliminary summative information about the module's effectiveness in achieving the learning outcomes.

B. Evaluation Design

Formative Evaluation Design. The formative evaluation includes insights gleaned from the pilot test with local teachers as well as the national field test. There are two primary sources of data for formative data: the Teacher Evaluation of the Materials Survey (TEMS) and the Student Evaluation of the Materials Survey (SEMS). Appendix C contains the instructions we gave to the teachers to facilitate their administration of the surveys. Appendices D and E contain copies of the TEMS and SEMS respectively. The TEMS contains a series of questions on the following topics for each lesson in the module:

- Text-based Content
- Graphic Content of the Text-based Material
- Format of the Text-based Material
- Organization of the Text-based Material
- Instructional Design of the Text-based Material
- Relevance of the Text-based Material
- the Website.

The teachers to respond to questions about each of these topics on a scale of Strongly Agree to Strongly Disagree and have space to make comments or elaborate their ratings.

At the end of the TEMS we ask questions about the overall difficulty of the module, what the three most valuable aspects and three least valuable aspects were of the module. We also ask the teachers to make specific suggestions to the curriculum developers to improve the module.

The SEMS has a reduced number of topics and items to which the students respond. Similar to the TEMS, we ask the students to respond to items on the following topics for each lesson in the module:

- Text-based Materials,
- Graphic Content of the Text-base Materials, and
- the Website.

The students also have opportunities to make comments about the module and activities, rate the difficulty of the module, identify the main strengths and weaknesses of the module, and make specific suggestions to the developers.

Summative Evaluation Design. Student Data. The summative evaluation focuses on how effectively the materials helped the students achieve the learning outcomes for each lesson. The present study uses the "One-Group Pretest-Posttest Design" articulated by Campbell and Stanley (1963).

Campbell and Stanley represent the design as:

$$O_1 \longrightarrow X \longrightarrow O_2$$

The initial Observation (O_1) is the pretest, which is followed by administration of the experimental treatment (X) and then the second Observation (O_2) or posttest.

Our initial observation (O_1) is the Student Knowledge Survey 1 (SKS1) a pretest of student knowledge on energy balance that teachers gave their students before any exposure to the materials. Teachers then taught the module in their classes until completed. This essentially is the classic experimental treatment (or X in Campbell and Stanley's diagram). The second observation (O_2) is a posttest composed of the same items as the pretest. These items are contained in our Student Knowledge Survey 2. Teachers administered the survey to students at the end of the field test. Appendices E and F contains copies of these surveys. The students answered True or False to statements from which we determined their pretest and posttest scores. In addition, they were given the option, in both the pretest and posttest of answering "Not Sure" on the items in order to estimate the level of sureness they had with their answers.

This type of summative evaluation is often termed "ipsative", that is, the norm or comparison against which the student is measured is their own prior performance (a pretest). The present performance (a posttest) is compared to the prior performance. In essence, the posttest is the student's "personal best" although it may not be the best in the class. This type of assessment is useful because of the different of levels of knowledge or ability at which students enter a class (or use an instructional module). The "difference" or "gain" scores show how much they have increased. A student at the top end on the pretest may not increase as much as the student who scores lower on the pretest merely because there is less room to improve.

Summative Evaluation. Teacher Data. The summative evaluation also contains a second source of data. The teachers use the TEMS to make judgments on how effectively the materials achieved each lessons learning outcomes. Achieving these learning outcomes is the ultimate goal of each lesson. Their answers provide an additional source of summative evaluation data.

Section IV. Results

A. Surveys Returned. The module was tested in 8 schools. We received a total of 440 complete student survey sets. A student survey set consists of a SEMs, an SKS1, and an SKS2. There were 8 SEMs, 11 SKS1s, and 9 SKS2s which did not have all of the accompanying survey forms to complete a survey set. This was probably due to student sickness or absence from class for other

reasons. We needed all three for complete analysis of the student data. Each teacher completed a Teacher Evaluation of the Materials Survey as well for a total of 8.

B. Demographic Results from Surveys Returned. The student surveys yielded the following results:

The study population was:

Female	54.5 %
Male	45.5 %

Of the valid responses to the question on "Race/Ethnicity" there were:

African American	11.7%
American Indian or Aleut	1.1%
Asian	7.8%
White	53.8%
Native Hawaiian/Pac Isl	.5%
Hispanic	13.7%
Mixed Race	11.4%

Grade Level Distribution	5 = .2%
	6 = 15.4%
	7 = 44.8%
	8 = 39.6%

C. Results of Formative Evaluation

The formative evaluation results come from questionnaires completed by the teachers and the students. Appendices D and G contain copies of the questionnaire for each group. The questionnaires were completed after the they had completed using the materials or while they were using the materials. There are demographic questions, fixed-response questions, and open-ended questions on both questionnaires.

The students responded to three sets of questions for each lesson. There were questions on the:

- Text-based Materials,
- Graphic Content of the Text-based Materials, and the
- Website.

The students indicated their level of agreement or disagreement from strongly agree to strongly disagree with statements in each section. The Tables in the following section provide the results in

terms of the percentage of students who indicated which response. In addition, the items are assigned a value: Strongly Disagree = 1, Disagree = 2, Disagree a Little = 3, Agree a Little = 4, Agree = 5, and Strongly Agree = 6. With these values means and standard deviations were calculated and also are reported.

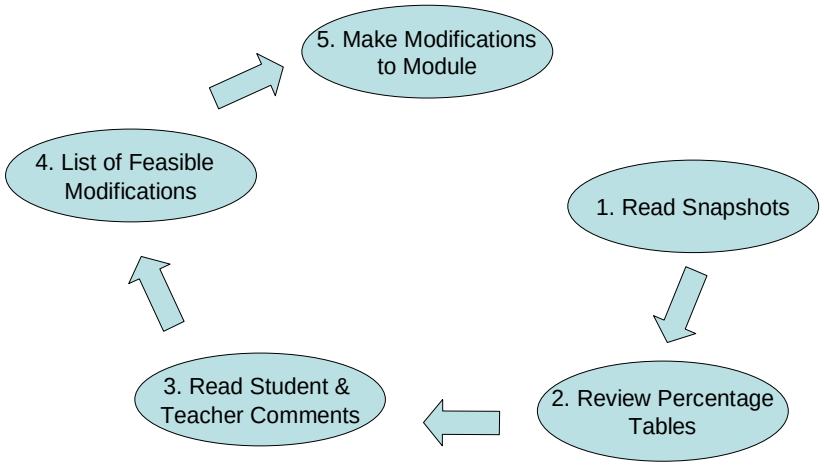
In addition, the students were able and encouraged to make comments on any question in the survey on all lessons. Those comments, in their totality, for all lessons are included in Appendix I.

The students were also asked to estimate the overall level of difficulty of the module, identify the main strengths and weaknesses of the module, and make specific suggestions for the developers to improve the module.

Utilization of Evaluation Results by Curriculum Developers. This report is composed of a great deal of different types of information. The figure below is a suggestion for the developers to consider as they review the evaluation results to assist in making improvements to the module. It is suggested that the developers:

1. Review the Formative Evaluation Snapshots in Tables 65-70, going on to
2. Review of the Percentage Tables in Tables 3-62, then
3. Read the Comments by Students and Teachers in Appendices I and J, and
4. Make a list of possible modifications to the module when factors such as feasibility, time, and cost are weighed, and finally
5. Make the modifications to the module within the time constraints of the project.

Figure 2. Utilization of Evaluation Results



Pre-Lesson Formative Evaluation from Students. The results for the Pre-Lesson are presented in three tables: one for the Text-Based Materials items, one for the Graphics Content items, and one for the Website items.

Table 3. Pre-Lesson Text-based Materials Questions Percentage Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The lesson was interesting.	2.7	5.3	7.8	31.6	40.7	11.9	4.38	1.13
2. I could understand the examples and explanations.	.5	3.2	7.6	20.6	44.4	23.8	4.77	1.03
3. The lesson made me think about new things and questions.	2.5	7.6	12.8	27.3	36.2	13.5	4.28	1.22
4. I could read the material easily.	1.2	2.1	5.5	19.6	39.6	32.0	4.90	1.06
5. I understood the scientific information clearly.	1.0	2.8	9.0	22.8	45.3	19.2	4.66	1.04
6. The materials and concepts were related to real life examples.	1.4	1.2	4.2	18.7	39.8	34.7	4.98	1.02
7. The materials and concepts fit nicely with the other materials in this course.	1.9	4.0	6.5	24.0	41.7	21.9	4.66	1.12

Table 4. Pre-Lesson Graphic Content of the Text-based Materials Questions Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The graphic content helped me understand the material covered.	1.6	5.4	9.0	30.1	41.7	12.2	4.41	1.09
2. The illustrations promoted discussion	2.1	7.7	15.4	33.8	32.3	8.7	4.13	1.14
3. The illustrations promoted thinking and questioning.	2.6	10.8	14.4	29.7	32.3	10.3	4.09	1.24
4. The illustrations motivated me to read the text.	7.7	11.2	20.4	28.6	23.0	9.2	3.76	1.37

Pre-Lesson Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The Pre-Lesson difficulty mean = 4.40, std. dev. = 1.70.

Lesson 1 Formative Evaluation from Students. The results for Lesson 1 are presented in three tables: one for the Text-Based Materials items, one for the Graphics Content items, and one for the Website items.

Table 5. Lesson 1 Text-based Materials Questions Percentage Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The lesson was interesting.	2.5	5.7	6.2	26.4	40.5	18.7	4.53	1.18
2. I could understand the examples and explanations.	1.7	3.2	4.0	22.4	49.8	18.9	4.72	1.03
3. The lesson made me think about new things and questions.	4.2	5.5	12.4	28.1	33.1	16.7	4.30	1.29
4. I could read the material easily.	1.3	2.8	4.5	19.3	41.7	30.4	4.89	1.06
5. I understood the scientific information clearly.	2.0	2.5	6.0	26.1	41.1	22.3	4.69	1.08
6. The materials and concepts were related to real life examples.	1.8	2.3	7.0	19.8	44.8	24.5	4.77	1.08
7. The materials and concepts fit nicely with the other materials in this course.	1.8	4.3	7.0	23.4	42.5	21.1	4.64	1.12

Table 6. Lesson 1 Graphic Content of the Text-based Materials Questions Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The graphic content helped me understand the material covered.	2.8	2.8	9.2	33.3	37.7	14.2	4.43	1.11
2. The illustrations promoted discussion	4.3	7.3	15.4	28.6	35.5	9.0	4.11	1.24
3. The illustrations promoted thinking and questioning.	5.2	7.3	12.9	28.8	33.0	12.9	4.16	1.31
4. The illustrations motivated me to read the text.	5.9	9.3	15.7	28.4	25.8	14.8	4.03	1.39

Table 7. Lesson 1 Website Questions Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The website was clearly connected to the lesson.	1.75	1.5	3.0	15.9	40.7	37.2	5.04	1.03
2. I was able to navigate easily in the website without confusion.	1.7	2.5	9.2	17.3	41.3	28.2	4.78	1.13
3. The website made the lesson more understandable.	1.7	4.5	6.0	20.2	39.4	28.2	4.76	1.16
4. The website made the lesson more interesting.	3.0	4.4	7.7	18.3	35.3	31.4	4.73	1.27

Lesson 1 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 1 difficulty mean = 4.35, std. dev. = 1.64.

Lesson 2 Formative Evaluation from Students. The results for Lesson 2 are presented in three tables: one for the Text-Based Materials items, one for the Graphics Content items, and one for the Website items.

Table 8. Lesson 2 Text-based Materials Questions Percentage Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The lesson was interesting.	3.2	5.2	7.2	17.7	35.7	30.9	4.70	1.30
2. I could understand the examples and explanations.	.3	3.0	4.0	17.0	47.6	28.1	4.93	.96
3. The lesson made me think about new things and questions.	3.5	9.3	12.0	27.6	30.6	17.0	4.24	1.32
4. I could read the material easily.	.5	2.9	4.7	17.2	47.2	27.4	4.90	.99
5. I understood the scientific information clearly.	1.0	3.5	6.0	19.5	43.0	27.0	4.81	1.07
6. The materials and concepts were related to real life examples.	2.5	3.0	4.8	22.4	37.7	29.6	4.79	1.16
7. The materials and concepts fit nicely with the other materials in this course.	2.0	2.8	6.0	22.6	41.6	24.1	4.70	1.13

Table 9. Lesson 2 Graphic Content of the Text-based Materials Questions Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The graphic content helped me understand the material covered.	2.9	6.5	6.2	21.8	39.5	23.1	4.58	1.25
2. The illustrations promoted discussion	4.2	6.5	11.5	29.0	33.5	15.2	4.27	1.28
3. The illustrations promoted thinking and questioning.	4.0	10.2	9.3	27.7	36.7	12.1	4.19	1.30
4. The illustrations motivated me to read the text.	7.6	8.6	11.5	27.0	32.2	13.2	4.07	1.41

Lesson 2 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 2 difficulty mean = 4.15, std. dev. = 1.71.

Lesson 3 Formative Evaluation from Students. The results for Lesson 3 are presented in three tables: one for the Text-Based Materials items, one for the Graphics Content items, and one for the Website items.

Table 10. Lesson 3 Text-based Materials Questions Percentage Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The lesson was interesting.	4.1	4.6	5.8	17.7	35.7	32.1	4.73	1.31
2. I could understand the examples and explanations.	1.2	3.4	4.3	23.1	43.3	24.8	4.78	1.05
3. The lesson made me think about new things and questions.	4.8	5.8	11.3	26.5	29.2	22.4	4.37	1.36
4. I could read the material easily.	2.2	2.2	4.8	19.4	38.5	32.9	4.89	1.12
5. I understood the scientific information clearly.	1.7	3.1	7.5	23.6	40.0	24.1	4.69	1.11
6. The materials and concepts were related to real life examples.	2.4	1.9	5.3	18.3	39.7	32.5	4.88	1.13
7. The materials and concepts fit nicely with the other materials in this course.	1.4	1.9	4.8	20.3	44.0	27.5	4.86	1.03

Table 11. Lesson 3 Graphic Content of the Text-based Materials Questions Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The graphic content helped me understand the material covered.	2.8	5.7	6.7	19.8	41.5	23.5	4.62	1.23
2. The illustrations promoted discussion	3.3	8.4	8.4	29.3	32.9	17.7	4.33	1.28
3. The illustrations promoted thinking and questioning.	4.1	7.7	9.8	23.8	34.7	19.9	4.37	1.34
4. The illustrations motivated me to read the text.	6.7	5.6	9.2	24.0	37.4	17.0	4.31	1.37

Table 12. Lesson 3 Website Questions Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The website was clearly connected to the lesson.	1.4	2.6	3.1	12.0	35.3	45.6	5.14	1.07
2. I was able to navigate easily in the website without confusion.	2.6	5.4	8.8	21.7	32.5	29.1	4.63	1.28
3. The website made the lesson more understandable.	3.4	2.6	5.7	14.2	38.2	35.9	4.89	1.22
4. The website made the lesson more interesting.	3.1	3.1	4.0	13.7	34.3	41.7	4.98	1.23

Lesson 3 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 3 difficulty mean = 4.68, std. dev. = 1.76.

Lesson 4 Formative Evaluation from Students. The results for Lesson 4 are presented in three tables: one for the Text-Based Materials items, one for the Graphics Content items, and one for the Website items.

Table 13. Lesson 4 Text-based Materials Questions Percentage Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The lesson was interesting.	6.5	9.2	8.7	23.2	36.0	16.4	4.22	1.42
2. I could understand the examples and explanations.	1.4	4.6	8.7	26.0	44.0	15.4	4.53	1.09
3. The lesson made me think about new things and questions.	7.0	11.1	14.0	25.8	29.9	12.3	3.97	1.42
4. I could read the material easily.	2.6	3.1	7.5	23.3	41.1	22.1	4.65	1.17
5. I understood the scientific information clearly.	3.4	5.1	7.0	26.1	38.4	20.0	4.52	1.24
6. The materials and concepts were related to real life examples.	4.1	8.0	9.9	25.6	36.0	16.4	4.31	1.31
7. The materials and concepts fit nicely with the other materials in this course.	3.4	5.3	9.5	24.5	38.3	18.9	4.46	1.24

Table 14. Lesson 4 Graphic Content of the Text-based Materials Questions Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The graphic content helped me understand the material covered.	3.9	8.9	7.5	25.7	38.2	15.7	4.33	1.30
2. The illustrations promoted discussion	5.4	10.3	10.8	33.2	27.4	13.0	4.06	1.34
3. The illustrations promoted thinking and questioning.	6.3	9.4	14.3	23.2	34.8	12.1	4.07	1.38
4. The illustrations motivated me to read the text.	7.8	11.5	9.2	24.3	38.1	9.2	4.01	1.42

Lesson 4 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 4 difficulty mean = 4.97 std. dev. = 1.77.

Lesson 5 Formative Evaluation from Students. The results for Lesson 5 are presented in three tables: one for the Text-Based Materials items, one for the Graphics Content items, and one for the Website items.

Table 15. Lesson 5 Text-based Materials Questions Percentage Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The lesson was interesting.	8.0	9.2	9.6	25.3	30.4	17.6	4.14	1.47
2. I could understand the examples and explanations.	2.6	5.6	11.3	22.1	39.7	18.7	4.47	1.22
3. The lesson made me think about new things and questions.	5.5	10.6	10.4	23.1	32.8	17.6	4.20	1.42
4. I could read the material easily.	1.3	3.5	8.0	22.9	42.4	22.0	4.68	1.09
5. I understood the scientific information clearly.	.9	5.5	7.8	25.4	37.9	22.5	4.62	1.13
6. The materials and concepts were related to real life examples.	3.0	3.9	5.4	20.4	38.9	28.3	4.73	1.21
7. The materials and concepts fit nicely with the other materials in this course.	2.2	5.7	8.6	21.5	38.3	23.7	4.59	1.23

Table 16. Lesson 5 Graphic Content of the Text-based Materials Questions Results for Students.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The graphic content helped me understand the material covered.	5.0	6.8	8.7	23.6	39.8	16.1	4.35	1.32
2. The illustrations promoted discussion	7.3	7.9	12.6	25.8	34.4	11.9	4.08	1.39
3. The illustrations promoted thinking and questioning.	6.7	8.0	12.7	25.3	32.0	15.3	4.14	1.41
4. The illustrations motivated me to read the text.	15.0	6.7	11.7	21.7	30.8	14.2	3.89	1.62

Lesson 5 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The lesson 4 difficulty mean = 4.26, std. dev. = 2.01.

Additional Analyses.

C. Students Interest in Science. The students were also asked three questions to determine their interest in science. The results for these three questions are summarized in Table 1.

Table 17. Students' Level of interest in Science Questions Results.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. I am very interested in science, in general.	2.5	3.96	7.7	31.4	36.9	17.5	4.49	1.14
2. I am very interested in Biology.	3.4	5.5	15.9	33.6	26.4	15.2	4.20	1.23
3. I am good at science, in general.	.9	3.4	8.05	32.5	41.6	13.4	4.52	1.00

Overall Module Results.

Module Difficulty. The students were also asked about the overall difficulty of the module. They rated the difficulty on a scale of 1 to 9 in which 1=too easy, 5=just right, and 9=too hard. The average level of difficulty was 4.89, std. dev. = 1.76.

Most and Least Valuable Aspects of the Module and Suggestions for Improvements. The students were asked to respond to an open-ended question on the most and least valuable aspects of the module and suggestions for improvements in the module. These comments, in their totality, are included in Appendix I.

Lesson Comparisons from Students. The lessons each have scores from the students on several dimensions. Table 18 depicts the average scores and std. dev. for each lesson when compared to the other lessons.

Table 18. Comparison of Lessons by Evaluation Dimension: Student Results

Evaluation Dimension	Pre-Lesson A Physical Activity Diary Mean & Std. dev.	Lesson 1 Burning It Up Mean & Std. dev.	Lesson 2 A Serving by Any Other Name Mean & Std. dev.	Lesson 3 A Delicate Balance Mean & Std. dev.	Lesson 4 Munching Mice Mean & Std. dev.	Lesson 5 Dear Me Mean & Std. dev.
Text-based Content	**4.65** .72	**4.65** 85	**4.72** .83	**4.75** .92	**4.37** .97	**4.49** .99
Graphic Content	**4.08** .99	**4.15** 1.04	**4.20** 1.08	**4.42** 1.08	**4.07** 1.21	**4.00** 1.28
Website	**N/A**	**4.83** .91	**N/A**	**4.91** .99	**N/A**	**N/A**
Level of Difficulty (Scale of 1-9)	**4.40** 1.70	**4.35** 1.64	**4.15** 1.71	**4.68** 1.76	**4.97** 1.77	**4.26** 2.01

Formative Evaluation Results from Teachers. The teachers completed a "Teacher Evaluation of the Materials Survey" or TEMS. This survey had a page of general information about their classes and how they used the materials. The TEMS had more items for the teachers to respond to such as format, organization, and instructional design of the materials as well as the overall questions on the module.

Formative Evaluation Results for Each Lesson from the Teachers. The results for each lesson are presented in eight tables: Text-Based Materials, Graphics Content items, Format of the Text-Based Materials, Organization of the Text-based Materials, Instructional Design of the Text-based Materials, Relevance of the Text-based Materials, Website, and Effectiveness in Achieving Learning Outcomes. Additionally, there is followed by a Table comparing the teacher results for each lesson.

Table 19. Pre-Lesson Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The content was accurate and current.	0	0	0	0	33.3	66.7	5.67	.52
2. The reading level was appropriate for my students.	0	0	0	0	20.0	80.0	5.80	.45
3. The vocabulary was listed separately in a useful glossary.	0	0	0	0	0	100	6.00	.00
4. The material stimulated new thinking and inquiry.	0	0	14.3	0	42.9	42.9	5.14	1.07
5. The examples and explanations were at the appropriate level.	0	0	12.5	12.5	37.5	37.5	5.00	1.07
6. The material was engaging (i.e. the students got more interested in the science content).	0	0	14.3	57.1	14.3	14.3	4.29	.95
7. The students could understand the scientific information clearly.	0	0	33.3	0	50.0	16.7	4.50	1.23

Table 20. Pre-Lesson Graphic Content of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Illustrations, charts, maps, or graphs were clear and meaningful.	0	12.5	12.5	12.5	25.0	37.5	4.63	1.51
2. Graphic content helped students understand the material covered.	0	0	20.0	0	40.0	40.0	5.00	1.23
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.	0	0	0	0	66.7	33.3	5.33	.58
4. Illustrations motivated students to read the text.	0	0	33.3	0	33.3	33.3	4.67	1.53
5. The material was engaging (i.e. it got them to do interesting things	0	0	12.5	37.5	12.5	25.0	4.88	1.36

Table 21. Pre-Lesson Format of the Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Lessons contained an appropriate amount of material.	0	0	0	14.3	42.9	42.9	5.29	.76
2. The size and format of print was appropriate.	0	0	0	12.5	37.5	50.0	5.38	.74

Table 22. Pre-Lesson Organization of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The organization of the lessons (chronological, thematic) facilitated the development of specific concepts or skills identified in the lesson objectives.	0	0	0	0	42.9	57.1	5.57	.54
2. Main concepts were presented logically.	0	0	0	0	25.0	75.0	5.75	.46
3. The information was presented at an age-appropriate pace.	0	0	0	0	37.5	62.5	5.63	.52

Table 23. Pre-Lesson Instructional Design of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The amount of prerequisite knowledge required to understand the material was acceptable.	0	0	28.6	0	14.3	57.1	5.00	1.41
2. The learning objectives were stated clearly.	0	0	0	14.3	14.3	71.4	5.57	.79
3. The instruction followed an inquiry-based approach.	0	0	0	6.7	42.9	42.9	5.29	.76

Table 24. Pre-Lesson Relevance of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Materials and concepts were related to real life examples.	0	0	0	0	0	100	6.00	.00
2. Module materials and concepts fit nicely with my existing instructional materials.	0	0	0	14.3	14.32	71.4	5.57	.79

Table 25. Pre-Lesson Effectiveness in Achieving Learning Outcomes Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Students should have increased understanding of how they spend their time.	0	0	0	14.3	14.3	71.4	5.57	.79
2. Students should have knowledge of and be able to evaluate their physical activity level.	0	0	0	14.3	28.6	57.1	5.43	.79
3. Students should recognize that activity levels vary from day to day and between individuals.	0	0	0	14.3	28.6	57.1	5.43	.79

Pre-Lesson Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. As judged by teachers, the Pre-Lesson difficulty mean = 6.25, std. dev. = 1.49.

Table 26. Lesson 1 Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The content was accurate and current.	0	0	0	0	14.3	85.7	5.86	.39
2. The reading level was appropriate for my students.	0	0	0	0	57.1	42.9	5.43	.54
3. The vocabulary was listed separately in a useful glossary.	0	25.0	0	0	50.0	25.0	4.50	1.73
4. The material stimulated new thinking and inquiry.	0	0	0	14.3	42.9	42.9	5.29	.76
5. The examples and explanations were at the appropriate level.	0	0	0	0	42.9	57.1	5.57	.54
6. The material was engaging (i.e. the students got more interested in the science content).	0	14.3	0	28.6	14.3	42.9	4.71	1.50
7. The students could understand the scientific information clearly.	0	0	14.3	0	42.9	42.9	5.14	1.07

Table 27. Lesson 1 Graphic Content of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Illustrations, charts, maps, or graphs were clear and meaningful.	0	0	0	16.7	16.7	66.7	5.50	.84
2. Graphic content helped students understand the material covered.	0	0	0	16.7	33.3	50.0	5.33	.82
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.	0	0	0	20.0	0	80.0	5.60	.89
4. Illustrations motivated students to read the text.	0	0	0	25.0	25.0	50.0	5.25	.96
5. The material was engaging (i.e. it got them to do interesting things	0	0	16.7	0	50.0	33.3	5.00	1.10

Table 28. Lesson 1 Format of the Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Lessons contained an appropriate amount of material.	0	16.7	0	16.7	33.3	33.3	4.67	1.51
2. The size and format of print was appropriate.	0	0	0	0	0	100	6.00	.00

Table 29. Lesson 1 Organization of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The organization of the lessons (chronological, thematic) facilitated the development of specific concepts or skills identified in the lesson objectives.	0	0	0	0	0	100	6.00	.00
2. Main concepts were presented logically.	0	0	0	0	0	100	6.00	.00
3. The information was presented at an age-appropriate pace.	0	0	0	0	16.7	83.3	5.83	.41

Table 30. Lesson 1 Instructional Design of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The amount of prerequisite knowledge required to understand the material was acceptable.	0	0	0	28.6	28.6	42.9	5.14	.90
2. The learning objectives were stated clearly.	0	0	0	14.3	14.3	71.4	5.57	.79
3. The instruction followed an inquiry-based approach.	0	0	0	0	16.7	83.3	5.83	.41

Table 31. Lesson 1 Relevance of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Materials and concepts were related to real life examples.	0	0	0	0	33.3	66.7	5.67	.52
2. Module materials and concepts fit nicely with my existing instructional materials.	0	0	0	0	16.7	83.3	5.83	.41

Table 32. Lesson 1 Website Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The relationship of the website to the lesson was clear.	0	0	0	0	12.5	87.5	5.88	.35
2. The students were able to navigate easily in the website without confusion.	0	12.5	0	0	25.0	62.5	5.25	1.39
3. The website added to the lesson.	0	0	12.5	0	0	87.5	5.63	1.06
4. The website material was engaging (i.e. it got us to do interesting things).	0	0	0	0	12.5	87.5	5.88	.35

Table 33. Lesson 1 Effectiveness in Achieving Learning Outcomes Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Students should be able to describe ways that humans use energy.	0	0	0	0	28.6	71.4	5.71	.49
2. Students should be able to describe Basal Metabolic Rate and its role in survival.	0	0	0	57.1	28.6	14.3	4.57	.79
3. Students should be able to estimate their total daily Calorie requirements based on a diary of individual activity.	0	0	0	0	14.3	85.7	5.86	.39
4. Students should be able to write at least one testable hypothesis dealing with energy use.	0	0	0	0	14.3	85.7	5.86	.39
5. Students should be able to describe the data required to test each hypothesis.	0	0	0	0	42.9	57.1	5.57	.54

Lesson 1 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. As judged by teachers, the lesson 1 difficulty mean = 5.86, std. dev. = .90.

Table 34. Lesson 2 Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The content was accurate and current.	0	0	0	0	0	100	6.00	.00
2. The reading level was appropriate for my students.	0	0	0	0	16.7	83.3	5.83	.41
3. The vocabulary was listed separately in a useful glossary.	0	0	0	0	25.0	75.0	5.75	.50
4. The material stimulated new thinking and inquiry.	0	0	14.3	0	28.6	57.1	5.29	1.13
5. The examples and explanations were at the appropriate level.	0	0	0	0	14.3	85.7	5.86	.39
6. The material was engaging (i.e. the students got more interested in the science content).	0	0	14.3	0	14.3	71.4	5.43	1.13
7. The students could understand the scientific information clearly.	0	0	14.3	14.3	0	71.4	5.29	1.25

Table 35. Lesson 2 Graphic Content of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Illustrations, charts, maps, or graphs were clear and meaningful.	0	0	0	0	0	100	6.00	.00
2. Graphic content helped students understand the material covered.	0	0	14.3	0	0	85.7	5.57	1.13
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.	0	0	0	0	16.7	83.3	5.83	.41
4. Illustrations motivated students to read the text.	0	0	0	66.7	0	33.3	4.67	1.16
5. The material was engaging (i.e. it got them to do interesting things	0	0	0	12.5	12.5	75.0	5.63	.74

Table 36. Lesson 2 Format of the Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Lessons contained an appropriate amount of material.	0	0	0	0	28.6	71.4	5.71	.49
2. The size and format of print was appropriate.	0	0	0	0	0	100	6.00	.00

Table 37. Lesson 2 Organization of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The organization of the lessons (chronological, thematic) facilitated the development of specific concepts or skills identified in the lesson objectives.	0	0	12.5	0	25.0	62.5	5.38	1.06
2. Main concepts were presented logically.	0	0	0	0	12.5	87.5	5.88	.35
3. The information was presented at an age-appropriate pace.	0	0	0	0	12.5	87.5	5.88	.35

Table 38. Lesson 2 Instructional Design of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The amount of prerequisite knowledge required to understand the material was acceptable.	0	0	12.5	0	25.0	62.5	5.38	1.06
2. The learning objectives were stated clearly.	0	0	0	0	0	100	6.00	.00
3. The instruction followed an inquiry-based approach.	0	0	0	0	0	100	6.00	.00

Table 39. Lesson 2 Relevance of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Materials and concepts were related to real life examples.	0	0	0	0	0	100	6.00	.00
2. Module materials and concepts fit nicely with my existing instructional materials.	0	0	0	0	0	100	6.00	.00

Table 40. Lesson 2 Effectiveness in Achieving Learning Outcomes Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Students should understand that their energy input comes from consuming food.	0	0	0	0	50.0	50.0	5.50	.54
2. Students should recognize that food labels contain useful information about kinds of nutrient and Calorie content of food.	0	0	0	12.5	12.5	75.0	5.63	.74
3. Students should become more aware of serving size.	0	0	0	0	37.5	62.5	5.63	.52

Lesson 2 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. As judged by teachers, the lesson 2 difficulty mean = 4.86, std. dev. = .90.

Table 41. Lesson 3 Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The content was accurate and current.	0	0	0	0	12.5	87.5	5.88	.35
2. The reading level was appropriate for my students.	0	0	0	0	12.5	87.5	5.88	.35
3. The vocabulary was listed separately in a useful glossary.	0	0	0	0	25.0	75.0	5.75	.50
4. The material stimulated new thinking and inquiry.	0	0	0	0	37.5	62.5	5.63	.52
5. The examples and explanations were at the appropriate level.	0	0	0	12.5	12.5	75.0	5.63	.74
6. The material was engaging (i.e. the students got more interested in the science content).	0	0	0	0	37.5	62.5	5.63	.52
7. The students could understand the scientific information clearly.	0	0	0	12.5	25.0	62.5	5.50	.76

Table 42. Lesson 3 Graphic Content of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Illustrations, charts, maps, or graphs were clear and meaningful.	0	0	0	12.5	25.0	62.5	5.50	.76
2. Graphic content helped students understand the material covered.	0	0	0	0	37.5	62.5	5.63	.52
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.	0	0	0	25.0	25.0	50.0	5.25	.89
4. Illustrations motivated students to read the text.	0	0	12.5	25.0	25.0	37.5	4.88	1.13
5. The material was engaging (i.e. it got them to do interesting things	0	0	0	0	37.5	62.5	5.63	.52

Table 43. Lesson 3 Format of the Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Lessons contained an appropriate amount of material.	0	12.5	0	12.5	25.0	50.0	5.00	1.41
2. The size and format of print was appropriate.	12.5	0	0	0	25.0	62.5	5.13	1.73

Table 44. Lesson 3 Organization of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The organization of the lessons (chronological, thematic) facilitated the development of specific concepts or skills identified in the lesson objectives.	0	0	0	0	37.5	62.5	5.63	.52
2. Main concepts were presented logically.	0	0	0	0	25.0	75.0	5.75	.46
3. The information was presented at an age-appropriate pace.	0	0	0	0	25.0	75.0	5.75	.46

Table 45. Lesson 3 Instructional Design of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The amount of prerequisite knowledge required to understand the material was acceptable.	0	12.5	0	12.5	12.5	62.6	5.13	1.46
2. The learning objectives were stated clearly.	0	0	0	0	23.1	87.5	5.88	.35
3. The instruction followed an inquiry-based approach.	0	0	12.5	0	12.5	75.0	5.50	1.07

Table 46. Lesson 3 Relevance of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Materials and concepts were related to real life examples.	0	0	0	0	12.5	87.5	5.88	.35
2. Module materials and concepts fit nicely with my existing instructional materials.	0	0	0	0	0	100	6.00	.00

Table 47. Lesson 3 Effectiveness in Achieving Learning Outcomes Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Students should be able to calculate Calorie intake from grams of carbohydrate, protein, and fat.	0	0	0	12.5	50.0	37.5	5.25	.71
2. Students should be able to calculate Calorie expenditures from physical activities.	0	0	0	25.0	37.5	37.5	5.13	.84
3. Students should be able to describe the relationship of energy balance to weight loss, maintenance, and gain.	0	0	0	0	37.5	62.5	5.63	.52
4. Students should be able to describe the energy balance for adolescents and teenagers.	0	0	0	0	37.5	62.5	5.63	.52
5. Students should be able to develop energy input/output strategies that allow for healthy weight for adolescents and teenagers.	0	0	0	12.5	37.5	50.0	5.38	.74

Table 48. Lesson 3 Website Questions Results from Teachers

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The relationship of the website to the lesson was clear.	0	0	0	0	0	100	6.00	.00
2. The students were able to navigate easily in the website without confusion.	0	25.0	0	0	12.5	62.5	4.88	1.81
3. The website added to the lesson.	0	12.5	0	0	0	100	5.50	1.41
4. The website material was engaging (i.e. it got us to do interesting things).	0	0	0	0	0	100	6.00	.00

Lesson 3 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. As judged by teachers, the lesson 3 difficulty mean = 5.75 std. dev. = .89.

Table 49. Lesson 4 Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The content was accurate and current.	0	0	0	0	25.0	75.0	5.75	.46
2. The reading level was appropriate for my students.	0	0	0	12.5	37.5	50.0	5.38	.74
3. The vocabulary was listed separately in a useful glossary.	20.0	0	0	0	40.0	40.0	4.60	2.07
4. The material stimulated new thinking and inquiry.	0	0	0	12.5	50.0	37.5	5.25	.71
5. The examples and explanations were at the appropriate level.	0	0	12.5	12.5	25.0	50.0	5.13	1.13
6. The material was engaging (i.e. the students got more interested in the science content).	0	0	12.5	12.5	25.0	50.0	5.13	1.13
7. The students could understand the scientific information clearly.	0	0	0	37.5	12.5	50.0	5.13	.99

Table 50. Lesson 4 Graphic Content of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Illustrations, charts, maps, or graphs were clear and meaningful.	0	0	0	0	25.0	75.0	5.75	.46
2. Graphic content helped students understand the material covered.	0	0	0	0	42.9	57.1	5.57	.54
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.	0	0	0	40.0	0	60.0	5.20	1.10
4. Illustrations motivated students to read the text.	0	0	0	20.0	20.0	60.0	5.40	.89
5. The material was engaging (i.e. it got them to do interesting things	0	0	0	25.0	25.0	50.0	5.25	.89

Table 51. Lesson 4 Format of the Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Lessons contained an appropriate amount of material.	0	0	0	0	62.5	37.5	5.38	.52
2. The size and format of print was appropriate.	0	0	0	0	37.5	62.5	5.63	.52

Table 52. Lesson 4 Organization of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The organization of the lessons (chronological, thematic) facilitated the development of specific concepts or skills identified in the lesson objectives.	0	0	0	0	25.0	75.0	5.75	.46
2. Main concepts were presented logically.	0	0	0	0	25.0	75.0	5.75	.46
3. The information was presented at an age-appropriate pace.	0	0	0	0	37.5	62.5	5.63	.52

Table 53. Lesson 4 Instructional Design of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The amount of prerequisite knowledge required to understand the material was acceptable.	0	12.5	0	12.5	37.5	37.5	4.88	1.36
2. The learning objectives were stated clearly.	0	0	0	0	37.5	62.5	5.63	.52
3. The instruction followed an inquiry-based approach.	0	0	0	0	37.5	62.5	5.63	.52

Table 54. Lesson 4 Relevance of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Materials and concepts were related to real life examples.	0	0	0	0	25.0	75.0	5.75	.46
2. Module materials and concepts fit nicely with my existing instructional materials.	0	0	0	0	25.0	75.0	5.75	.46

Table 55. Lesson 4 Effectiveness in Achieving Learning Outcomes Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Students should recognize that in a general population there will be differences in the state of energy balance.	0	0	0	37.5	25.0	37.5	5.00	.93
2. Students should be able to identify factors that contribute to differences in energy balance.	0	0	0	25.0	12.5	62.5	5.38	.92
3. Students should recognize that there is a genetic component involved in energy balance.	0	0	12.5	12.5	25.0	50.0	5.13	1.13
4. Students should understand that increased availability of food affects energy balance and causes weight gain.	0	0	0	0	42.9	57.1	5.57	.56
5. Students should understand that increased activity can affect energy balance and weight gain.	0	0	0	0	50.0	50.0	5.50	.54
6. Students should be able to describe the relationship between energy consumption, energy use, and weight gain.	0	0	0	0	50.0	50.0	5.50	.54

Lesson 4 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. As judged by teachers, the lesson 4 difficulty mean = 6.00, std. dev. = .756

Table 56. Lesson 5 Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The content was accurate and current.	0	0	0	0	33.3	66.7	5.67	.58
2. The reading level was appropriate for my students.	0	0	0	0	33.3	66.7	5.67	.58
3. The vocabulary was listed separately in a useful glossary.	0	0	0	0	0	100	6.00	.00
4. The material stimulated new thinking and inquiry.	0	25.0	0	25.0	0	50.0	4.50	1.92
5. The examples and explanations were at the appropriate level.	0	0	0	0	33.3	66.7	5.67	.58
6. The material was engaging (i.e. the students got more interested in the science content).	0	0	50.0	0	0	50.0	4.50	1.73
7. The students could understand the scientific information clearly.	0	0	25.0	0	0	75.0	5.25	1.50

Table 57. Lesson 5 Graphic Content of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Illustrations, charts, maps, or graphs were clear and meaningful.	0	0	0	0	100	0	5.00	.00
2. Graphic content helped students understand the material covered.	0	0	0	0	100	0	5.00	.00
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.	0	0	0	0	100	0	5.00	.00
4. Illustrations motivated students to read the text.	0	0	0	0	0	0	----	----
5. The material was engaging (i.e. it got them to do interesting things	0	0	50.0	25.0	0	25.0	4.00	.00

Table 58. Lesson 5 Format of the Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Lessons contained an appropriate amount of material.	0	0	20.0	0	20.0	60.0	5.20	1.30
2. The size and format of print was appropriate.	0	0	0	0	20.0	80.0	5.80	.45

Table 59. Lesson 5 Organization of Text-based Materials Questions Results for Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The organization of the lessons (chronological, thematic) facilitated the development of specific concepts or skills identified in the lesson objectives.	0	0	0	16.7	33.3	50.0	5.33	.82
2. Main concepts were presented logically.	0	0	0	0	75.0	25.0	5.25	.50
3. The information was presented at an age-appropriate pace.	0	0	0	0	40.0	60.0	5.60	.55

Table 60. Lesson 5 Instructional Design of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. The amount of prerequisite knowledge required to understand the material was acceptable.	0	0	0	0	28.6	71.4	5.71	.49
2. The learning objectives were stated clearly.	0	0	0	0	16.7	83.3	5.83	.41
3. The instruction followed an inquiry-based approach.	0	0	16.7	0	33.3	50.0	5.17	1.17

Table 61. Lesson 5 Relevance of Text-based Materials Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Materials and concepts were related to real life examples.	0	0	0	16.7	16.7	66.7	5.50	.84
2. Module materials and concepts fit nicely with my existing instructional materials.	0	0	0	16.7	16.7	66.7	5.50	.84

Table 62. Lesson 5 Effectiveness in Achieving Learning Outcomes Questions Results from Teachers.

Question	Percent Strongly Disagree	Percent Disagree	Percent Disagree a Little	Percent Agree a Little	Percent Agree	Percent Strongly Agree	Mean	Std. Dev.
1. Students should be able to define E_{in} and E_{out}.	0	0	0	14.3	28.6	57.1	5.43	.79
2. Students should be able to explain why the best energy balance for children, adolescents, and teenagers differs from the best energy balance for adults.	0	0	0	14.3	28.6	57.1	5.43	.79
3. Students should be able to describe appropriate strategies for adults to maintain energy balance.	0	0	0	0	57.1	42.9	5.43	.54

Lesson 5 Difficulty. The scale used for the difficulty of each lesson was line across the page with three easily identifiable equidistant points for the students to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. As judged by teachers, the lesson 5 difficulty mean = 4.71, std. dev. = .49.

Lesson Comparisons. The lessons each have scores from the teachers on several dimensions. Table 63 depicts the average scores for each lesson when compared to the other lessons.

Table 63. Comparison of Lessons by Evaluation Dimension: Teacher Results

Evaluation Dimension	Pre-Lesson Physical Activity Diary Mean & Std. dev.	Lesson 1 Burning It Up Mean & Std. dev.	Lesson 2 A Serving by Any Other Name Mean & Std. dev.	Lesson 3 A Delicate Balance Mean & Std. dev.	Lesson 4 Munching Mice Mean & Std. dev.	Lesson 5 Dear Me Mean & Std. dev.
Text-based Content	**5.72** .40	**5.00** .71	**5.50** .74	**5.96** .07	**5.31** ,63	**6.00** .00
Graphic Content	**5.33** .61	**5.40** .59	**5.53** .42	**5.38** .60	**5.40** .82	-----
Format	**5.36** .75	**5.33** .75	**5.86** .24	**5.06** .94	**5.50** .46	**5.50** .71
Organization	**5.71** .36	**5.94** .14	**5.71** .45	**5.71** .45	**5.71** .45	**5.25** .50
Instructional Design	**5.29** .62	**5.44** .54	**5.90** .16	**5.50** .62	**5.38** .70	**5.55** .58
Relevance	**5.79** .39	**5.75** .42	**6.00** .00	**5.94** .18	**5.75** .46	**5.50** .84
Achieving Learning Outcomes	**5.48** .69	**5.51** .36	**5.58** .53	**5.40** .58	**5.45** .61	**5.43** .66
Website	**N/A**	**5.66** .68	**N/A**	**5.59** .73	**N/A**	N / A
Level of Difficulty (Scale = 1 - 9)	**6.25** 1.49	**5.86** .90	**4.86** .90	**5.75** .89	**6.00** .76	**4.71** .49

In discussions of the utility of replacement or supplementary modules, the notion of difficulty of the modules and individual lessons comes up frequently. Table 64 is a comparison of the levels of difficulty for each lesson as well as the overall module. The scale used for all these estimations by the students and teachers was line across the page with three easily identifiable equidistant points to mark a judgment. At the left extreme was 1 = Extremely Easy, in the middle 5 = Just Right, and at the right extreme 9 = Extremely Hard. The averages are all in the middle range, close to "Just Right", therefore we must conclude that for this module the developers hit their target. The estimated difficulty was slightly higher in student estimations compared to teacher estimates in most cases.

Table 64: Comparison of Means of Teachers and Students Levels of Difficulty (Scale = 1 -9)

	Teachers	Students
Pre-Lesson 1: Physical Activity Diary	**6.25**	**4.40**
Lesson 1: Burning It Up	**5.86**	**4.35**
Lesson 2: A Serving by Any Other Name	**4.86**	**4.15**
Lesson 3: A Delicate Balance	**5.75**	**4.68**
Lesson 4: Munching Mice	**6.00**	**4.97**
Lesson 5: Dear Me	**4.71**	**4.26**
Overall Module	**4.73**	**4.89**

Module Difficulty. The teachers were also asked about the overall difficulty of the entire module. They rated the difficulty on a scale of 1 to 9 in which 1=too easy, 5=just right, and 9=too hard. The average level of difficulty was 4.73, std. dev. = 1.44.

Most and Least Valuable Aspects of the Module and Suggestions for Improvements. The teachers were asked to respond to an open-ended question on the most valuable aspects of the module and to discuss why. These comments are included in their totality in Appendix J.

Snapshots of Lessons. It is useful for the developers who work on specific lessons to have a picture of the impressions of the teachers and students who used their materials. Tables 65-70 contain information extracted from other tables and put here to provide a "snapshot" of each lesson. In addition, the rankings of these ratings are provided to give an idea of how they compare to other lessons. The rankings are meant to be useful only for gross comparisons. Sometimes the differences between ranks is great, sometimes the difference is quite small. Typical comments by teachers and students are included as well as an "Assessment". The assessment statements are meant to provide a starting point for the developers as they go into the next phase of the development process.

Table 65. A Formative Evaluation Snapshot of the Pre-Lesson: A Physical Activity Diary

	Teacher Rating	Teacher Rank (out of 6 lessons)	Student Rating	Student Rank (out of 6 lessons)
Difficulty	6.25 (Scale = 1 - 9)	1	4.40 (1 - 9)	3
Achieving Learning Outcomes	5.48 (Scale = 1 - 6)	3	N / A	N / A
Text-based Content	5.72 (Scale = 1 - 6)	3	4.65 (Scale = 1 - 6)	3
Graphic Content	5.33 (Scale = 1 - 6)	4	4.08 (Scale = 1 - 6)	4
Format	5.36 (Scale = 1 - 6)	3	N / A	N / A
Organization	5.71 (Scale = 1 - 6)	2	N / A	N / A
Instructional Design	5.29 (Scale = 1 - 6)	6	N / A	N / A
Relevance	5.79 (Scale = 1 - 6)	3	N / A	N / A
Website	N / A	N / A	N / A	N / A

	Teachers	Students
Typical Pre-Lesson Comments	Students didn't like the writing. Chart was overwhelming to some students. A little rushed but very "doable" in time allowed. Confusion about whether numbers meant calories spent, time, or calories gained.	It was fun and interesting. Made me think why I sit and sleep so much. A website for this would have been good. Well set up but a little boring.

Assessment	The teacher rated this as the most difficult "lesson". The ratings on most other dimensions were in the mid range. The instructional design was rated low which probably means it was not apparent to the teachers. The students liked the pre-lesson but wanted web work of some sort which they seem to want on all lessons. Room for improvement includes working on the chart and the confusion generated by its use.

Table 66. A Formative Evaluation Snapshot of Lesson 1: Burning It Up

	Teacher Rating	Teacher Rank (out of 6 lessons)	Student Rating	Student Rank (out of 6 lessons)
Difficulty	5.86 (Scale = 1 - 9)	3	4.35 (1 - 9)	4
Achieving Learning Outcomes	5.51 (Scale = 1 - 6)	2	N / A	N / A
Text-based Content	5.00 (Scale = 1 - 6)	6	4.65 (Scale = 1 - 6)	3
Graphic Content	5.40 (Scale = 1 - 6)	2	4.15 (Scale = 1 - 6)	3
Format	5.33 (Scale = 1 - 6)	4	N / A	N / A
Organization	5.94 (Scale = 1 - 6)	1	N / A	N / A
Instructional Design	5.44 (Scale = 1 - 6)	4	N / A	N / A
Relevance	5.75 (Scale = 1 - 6)	4	N / A	N / A
Website	5.66 (Scale = 1 - 6)	1 (out of 2 lessons with web activities)	4.83 (Scale = 1 - 6)	2 (out of 2 lessons with web activities)

	Teachers	Students
Typical Lesson 1 Comments	The kids love the web stuff. Excellent reinforcer of the scientific method. The material should have been more engaging. The material took 2.5 days when I thought it would take 1 day. Lesson was too long.	The website was fun. It was boring, fun, and easy. It was fun to make our own lab. I like using the computer. The website was great.

Assessment	Lesson 1 rated 4 and 3 out of 6 in level of difficulty. It was rated high in organization and graphic content but lower in text-based material. The web activity was a hit. Students thought it a bit easy. Consider modifications which add an element of difficulty such as typical models of burning calories for different types of athletes or athletes in a game competing against each other.

Table 67. A Formative Evaluation Snapshot of Lesson 2: A Serving By Any Other Name

	Teacher Rating	Teacher Rank (out of 6 lessons)	Student Rating	Student Rank (out of 6 lessons)
Difficulty	4.86 (Scale = 1 - 9)	5	4.15 (1 - 9)	6
Achieving Learning Outcomes	5.58 (Scale = 1 - 6)	1	N / A	N / A
Text-based Content	5.50 (Scale = 1 - 6)	4	4.72 (Scale = 1 - 6)	2
Graphic Content	5.53 (Scale = 1 - 6)	1	4.20 (Scale = 1 - 6)	2
Format	5.86 (Scale = 1 - 6)	1	N / A	N / A
Organization	5.71 (Scale = 1 - 6)	2	N / A	N / A
Instructional Design	5.90 (Scale = 1 - 6)	1	N / A	N / A
Relevance	6.00 (Scale = 1 - 6)	1	N / A	N / A
Website	N / A	N / A	N / A	N / A

	Teachers	Students
Typical Lesson 2 Comments	Students LOVED this lesson. Need more information on calories in different foods. They wanted a definition of "moderation" and an "appropriate" serving size. Need more information and explanation of what the labels mean on our food.	I liked the play doh. It was fun, boring, easy, exciting, creative. It was fun as well as educational. It was cool to see the amount of food we eat compared to an actual serving size.

Assessment	Lesson 2 rated 5th and 6th in difficulty compared to the other lessons. Teachers rated it achieving learning outcomes as well as one several other evaluation dimensions. It was perceived as fun and interesting. Room for improvement includes providing more information on different foods and addressing the teachers questions which actually come from the students.

Table 68. A Formative Evaluation Snapshot of Lesson 3: A Delicate Balance

	Teacher Rating	Teacher Rank (out of 6 lessons)	Student Rating	Student Rank (out of 6 lessons)
Difficulty	5.75 (Scale = 1 - 9)	4	4.68 (1 - 9)	2
Achieving Learning Outcomes	5.40 (Scale = 1 - 6)	6	N / A	N / A
Text-based Content	5.96 (Scale = 1 - 6)	3	4.75 (Scale = 1 - 6)	1
Graphic Content	5.38 (Scale = 1 - 6)	3	4.42 (Scale = 1 - 6)	1
Format	5.06 (Scale = 1 - 6)	5	N / A	N / A
Organization	5.71 (Scale = 1 - 6)	2	N / A	N / A
Instructional Design	5.50 (Scale = 1 - 6)	3	N / A	N / A
Relevance	5.94 (Scale = 1 - 6)	2	N / A	N / A
Website	5.59 (Scale = 1 - 6)	2 (only 2 lessons had web activities)	4.91 (Scale = 1 - 6)	1 (only 2 lessons had web activities)

	Teachers	Students
Typical Lesson 3 Comments	We needed more guidance. Difficulty with computers. This lesson was very long, almost 2.5 class periods. It was better for 9th graders.	Papers were easier. It was fun being the doctor. It was fun and entertaining. I've started watching what I eat now. I liked knowing how you gain or lose weight. I didn't know what the reference manual was for.

Assessment	Lesson 3 was very engaging and interesting to the students. It was ranked 2nd in difficulty by students and 4th by teachers. The teachers ranked it relatively high in organization and relevance but lowest in achieving learning outcomes. Although the website was popular there were problems with computers and access. It might be useful to offer the teacher a worksheet backup for when computers are down or internet access is limited or slow. Room for improvement would include addressing the time requirement mentioned by several teachers.

Table 69. A Formative Evaluation Snapshot of Lesson 4: Munching Mice

	Teacher Rating	Teacher Rank (out of 6 lessons)	Student Rating	Student Rank (out of 6 lessons)
Difficulty	6.00 (Scale = 1 - 9)	2	4.97 (1 - 9)	1
Achieving Learning Outcomes	5.45 (Scale = 1 - 6)	4	N / A	N / A
Text-based Content	5.31 (Scale = 1 - 6)	5	4.37 (Scale = 1 - 6)	5
Graphic Content	5.40 (Scale = 1 - 6)	2	4.07 (Scale = 1 - 6)	5
Format	5.50 (Scale = 1 - 6)	2	N / A	N / A
Organization	5.71 (Scale = 1 - 6)	2	N / A	N / A
Instructional Design	5.38 (Scale = 1 - 6)	5	N / A	N / A
Relevance	5.75 (Scale = 1 - 6)	4	N / A	N / A
Website	N / A	N / A	N / A	N / A

	Teachers	Students
Typical Lesson 4 Comments	Mixed success with kids. No Website! Research questions were confusing. Kids tend to make the experiments much more complicated than necessary. They learned how to use the graph in a real life situation.	A boring lesson. It was all paper. Better with real mice. Mice and people aren't the same! I am not the type to think and question unnecessarily. No Website!

Assessment	Lesson 4 was ranked 2nd in difficulty by teachers and 1st by students. The other evaluation dimensions were ranked in the low range compared to other lessons except for organization. It was a well-liked lesson that was perceived as interesting and fun. Again, teachers and students seem to want a web activity with every lesson. The excellent web activities on 2 lessons seem to have created the desire for more. Lesson 4 had high scores on graphic content, organization, and format. Room for improvement may include identifying existing relevant websites for more information if not a whole activity.

Table 70. A Formative Evaluation Snapshot of Lesson 5: Dear Me

	Teacher Rating	Teacher Rank (out of 6 lessons)	Student Rating	Student Rank (out of 6 lessons)
Difficulty	4.71 (Scale = 1 - 9)	6	4.26 (1 - 9)	5
Achieving Learning Outcomes	5.43 (Scale = 1 - 6)	5	N / A	N / A
Text-based Content	6.00 (Scale = 1 - 6)	1	4.49 (Scale = 1 - 6)	4
Graphic Content	------ (Scale = 1 - 6)	-----	4.00 (Scale = 1 - 6)	6
Format	5.50 (Scale = 1 - 6)	2	N / A	N / A
Organization	5.25 (Scale = 1 - 6)	3	N / A	N / A
Instructional Design	5.55 (Scale = 1 - 6)	2	N / A	N / A
Relevance	5.50 (Scale = 1 - 6)	5	N / A	N / A
Website	N / A	N / A	N / A	N / A

	Teachers	Students
Typical Lesson 5 Comments	Some found performance assessment difficult to grasp. I thought the students would remember more than they did.	I didn't like writing the letter. I thought it was neat. No material but nice end to the unit. No website! It helped summarize the unit.

Assessment	Lesson 5 was ranked 5 and 6 on difficulty compared to other lessons. Teachers ranked it 5th in achieving learning outcomes but in the high range on most other factors. A number of students did not care for writing the letters. The teachers and students would like web links or activities to see more examples. Consider adding more information and searching for web links to give the teachers and students more resources to explore on their own. It was thought to be a good summary assignment of the unit but could use some pizazz of some sort.

Additional Analyses

Teacher Background Materials Evaluation. The teachers were asked to respond to a second set of questions about the background materials in a follow up survey after they had returned their evaluation materials. The survey was constructed with Perseus Software and sent to them at their email addresses. This software allows them to merely click on a URL in the email message which brings up the survey on their system. They then click on their responses or type in answers to open-ended questions, then click on a "Submit Survey" button. They respondents are then automatically returned to their email software program. The survey responses come back to us automatically and are installed in an Access database which we can analyze with SPSS. The responses are anonymous unless you ask the respondent to identify themselves which of course we had to do to match the responses with the rest of their data in our database. We did this for two reasons: (1) an oversight by the project evaluator in neglecting to put those questions on the mailed out questionnaire, and (2) to serve as a test for future applications of this technology for other BSCS projects. A copy of the Perseus web-based survey is included in Appendix H. Table 71 contains the results of the first three questions. Tables 72-75 contain the results of the open-ended questions. All the tables must be viewed with caution because there are fewer responses than to the general TEMS questionnaire.

Table 71. Teacher Background Materials Evaluation.

Question	Strongly Disagree	Disagree	Disagree a Little	Agree a Little	Agree	Strongly Agree	Mean	Std. Dev.
1. Overall, the Teacher Background Materials for this teaching unit were very useful.	0	0	0	0	42.9%	57.1%	5.57 (n=7)	.53
2. I found the references quite useful.	0	0	0	14.3%	71.4%	14.3%	5.00 (n=7)	.57
3. I would prefer to have the references inserted in the text of the Teacher Background section.	0	28.6%	28.6%	14.3%	28.6%	0	3.42 (n=7)	1.27

Table 72. The three most important features of the Teacher Background materials for me were:

RESPONSES
It gave me a chance to review and have the information necessary if I had questions from students.
Gave ME info that I would probably not think about for the unit.
Helped me to explain certain concepts to the students.
Were easy to read and gave thorough explanations of concepts.
Overview
Standards correlation
Information presented in the introduction
Refreshing my memory
Finding new and different ways to explain things.
Providing the opportunity to find ways of extending the unit.
The Energy Balance equation was very useful as it was somewhat new info for me. This gave a good background to students....it was a difficult concept for them. By the end of the unit, a higher percentage of the class was getting a better grasp. The negative balance, positive balance, and energy balance was a gradual ah ha.
Factors affecting energy intake was great. The chart gave good example for comparison.

Table 73. I would like to have seen the following additional information in the Teacher Background materials.

RESPONSES
None
NOTHING!
None
Can't think of anything.
Other food pyramids like the one from the Mayo Clinic or the French pyramid. More follow-up on nutrition and where to go from the end of the unit would be helpful. Also, info to send home with students wondering about weight loss programs. A BMI worksheet for students would be helpful too.

Table 74. The Teacher Background materials could have omitted the following:

RESPONSES
Not anything.
I thought all was useful.
Info on the 5E model
Don't leave anything out. You don't know what level all the different teachers will be at in terms of comfort with this content.
I would keep it all. Some sections I used very little as I felt very comfortable with already internalizing it. Several other teachers were curious about what I was doing and found it useful, some of the things I felt not necessary. So, keep it.

Table 75. How could the Teacher Background materials be made more useful?

RESPONSES
They worked fine for me.
They were great!
A list of required supplies to carry out activities.
Flow chart could estimate the length of time each lesson or activity will take.
I thought it was great as is. It is concise and easy to understand. some thought about incorporating it in the lesson, piece by piece, but then you end up with lesson plans that are too wordy and would be a "turn-off" to teachers having to read through the whole thing.
I liked having it referenced at the beginning of the lesson and having it grouped together. I might still prefer putting the material with the corresponding lesson. But would not want a lot of repeated reading material.

D. Results of Summative Evaluation

The summative evaluation consists primarily of examination of the differences between the student's Pretest and Posttest scores on a "Student Knowledge Survey". The items were statements which the students could indicate True, False, or Not Sure. Appendices E and F contain copies of these surveys. The students took the first Knowledge survey (the Pretest) before exposure to the materials and the Posttest after using the materials. All students answered questions 1 – 21. Additionally, analysis of the "Not Sure" responses was conducted as well as the teacher's estimates of the success in achieving learning outcomes.

T-Tests. The students' answers were scored with answer keys which yielded the number of items they got correct. The Not Sure responses were scored as incorrect in the initial analyses. The mean number of correct responses on the Pretest = 9.73 (out of 21, Std. Dev. = 3.38). The mean number of correct responses on the Posttest = 13.51 (out of 21, Std. Dev. = 3.64). The t-test for Pretest and Posttest scores (using questions 1-21) was -20.01, df=400, $p < .01$.

One-way Analysis of Variance. A one-way analysis of variance was also conducted because t-tests are primarily comparisons of significant differences between means. The one-way analysis of variance gives us an idea of whether the variances in the scores also are significantly different. The obtained F value = 6.316, $p<.01$. This means that the variances were significantly different. Based on the t-tests and the one-way ANOVA we have substantial evidence that the materials increased student learning of the items covered in the Knowledge Test

Correlation. It is also useful in conceptualizing the relationship between pretest and posttest scores to view them as correlates. Essentially, this view is that the higher a score on the pretest, the higher the score on the posttest, or what is termed a "positive correlation". Since the variables are interval level measures a Pearson's r correlation coefficient was calculated. The Pearson's r for the

pretest and posttest scores = .420, $p<.01$. This is a statistically significant correlation. Essentially, this means that when you take the square of the .420 figure to obtain r^2 you get the amount of variance in the posttest scores which is explained by the pretest scores. This $r^2 = .176$ or roughly 18 percent of the variance in the posttest scores is explained by the preexisting level of knowledge which was measured by the pretest scores. It can be assumed that the remaining variance in the posttest scores (that is, most of it) is explained by other factors, such as exposure to the instructional materials and teaching the students have received.

Analysis of "Not Sure" Responses. In addition to the analysis of the True-False answers on the Pretest and Posttest Knowledge Surveys, there is a "Not Sure" category of response. This response was offered on the survey because it essentially is a non-threatening option for students to choose when they in fact don't know what is the answer. The is entirely possible for many students because they had not yet covered the material. Correct answers are probably the result of their own reading, good guessing, or luck. We wanted to establish that it was OK to say they did not know the material rather than to guess. Therefore, scores were computed for the number of "Not Sure" responses for each student on the Pretest and the Post Test. The mean number of Not Sure responses for the Pretest = 5.48 (out of 21, Std. Dev. = 3.79). The mean number of Not Sure responses for the Posttest = 1.86 (out of 21, Std. Dev. = 2.64). The t-test for these means = 18.318, df = 400, $p<.01$). This means that the average number of Not Sure responses was substantially lower in the Posttest than in the Pretest. Guessing or uncertainty seems to have been diminished.

Teacher Estimation of Achieving Learning Outcomes. The pretest and posttest scores are the primary method of determining the results of the summative evaluation. Another input for this evaluation is the judgments of the teachers on how effective the lessons and the overall module were in achieving the learning outcomes. Tables 19-62 give the distribution of responses from the teachers. Table 76 below summarizes the results of those tables. The scale is 1= Strongly Disagree, 2=Disagree, 3=Disagree a Little, 4=Agree a Little, 5=Agree, 6=Strongly Agree.

The questions the teachers were answering were whether they agreed or disagreed that the lessons were effective in achieving the specific lesson learning outcomes. The table clearly shows that the teacher judgments fell predominantly in the Agree and Strongly Agree range on these statements. The lowest score were in Lesson 3: Outcome 4 and Lesson 2: Outcome 1. These scores, however, were still in the Agree range. The highest scores were on Lesson 1: Outcome 1 and Lesson 3: Outcomes 2 and 3.

Table 76. Teachers Summative Judgments on Achieving Learning Outcomes.

Learning Outcomes	Mean & (Std. dev.) (Scale = 1-6)
Pre-Lesson Learning Outcomes	
1. Students should have increased understanding of how they spend their time.	5.57 (.79)
2. Students should have knowledge of and be able to evaluate their physical activity level.	5.43 (.79)
3. Students should recognize that activity levels vary from day to day and between individuals.	5.43 (.79)
Lesson 1 Learning Outcomes	
1. Students should be able to describe ways that humans use energy.	5.71 (.49)
2. Students should be able to describe Basal Metabolic Rate and its role in survival.	4.57 (.79)
3. Students should be able to estimate their total daily Calorie requirements based on a diary of individual activity.	5.86 (.39)
4. Students should be able to write at least one testable hypothesis dealing with energy use.	5.86 (.39)
5. Students should be able to describe the data required to test each hypothesis.	5.57 (.54)
Lesson 2 Learning Outcomes	
1. Students should understand that their energy input comes from consuming food.	5.50 (.54)
2. Students should recognize that food labels contain useful information about kinds of nutrient and Calorie content of food.	5.63 (.74)
3. Students should become more aware of serving size.	5.63 (.52)
Lesson 3 Learning Outcomes	
1. Students should be able to calculate Calorie intake from grams of carbohydrate, protein, and fat.	5.25 (.71)
2. Students should be able to calculate Calorie expenditures from physical activities.	5.13 (.84)
3. Students should be able to describe the relationship of energy balance to weight loss, maintenance, and gain.	5.63 (.52)
4. Students should be able to describe the energy balance for adolescents and teenagers.	5.63 (.52)
5. Students should be able to develop energy input/output strategies that allow for healthy weight for adolescents and teenagers.	5.38 (.74)
Lesson 4 Learning Outcomes	
1. Students should recognize that in a general population there will be differences in the state of energy balance.	5.00 (.93)
2. Students should be able to identify factors that contribute to differences in energy balance.	5.38 (.92)
3. Students should recognize that there is a genetic component involved in energy balance.	5.13 (1.13)
4. Students should understand that increased availability of food affects energy balance and causes weight gain.	5.57 (.56)
5. Students should understand that increased activity can affect energy balance and weight gain.	5.50 (.54)
6. Students should be able to describe the relationship between energy consumption, energy use, and weight gain.	5.50 (.54)
Lesson 5 Learning Outcomes	
1. Students should be able to define E_{in} and E_{out}.	5.43 (.79)
2. Students should be able to explain why the best energy balance for children, adolescents, and teenagers differs from the best energy balance for adults.	5.43 (.79)
3. Students should be able to describe appropriate strategies for adults to maintain energy balance.	5.43 (.54

Additional Analyses.

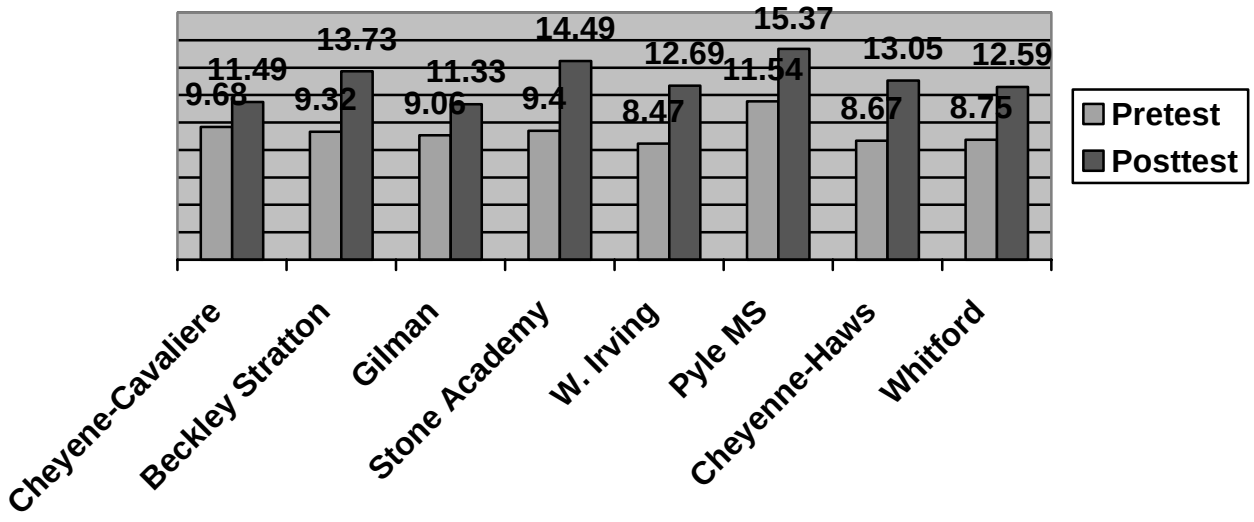
School Comparisons. In analyzing the data it is also useful to break down differences between sampled units. Schools were selected to be in the field test because they differed in terms of geographic region and racial and ethnic composition of the student body. The primary sites received a field test orientation and the secondary sites did not. The t-tests reported are paired comparisons. The difference (or gain) scores are calculated by subtracting the pretest mean from the posttest mean. Table 77 contains the result of these analyses.

Table 77. School Comparisons on Pretest and Posttest results.

School	Primary or Secondary Site	n	SKS1 (Pretest)	SKS2 (Posttest)	t-test	Difference (Gain) Score
1. Cheyenne - Cavaliere	Primary	41	Mean = **9.68**	Mean = **11.49**	t = 3.19 p<.01	1.81
2. Beckley Stratton	Primary	41	Mean = **9.32**	Mean = **13.73**	t = 5.93 p<.01	4.41
3. Gilman MS	Primary	46	Mean = **9.06**	Mean = **11.33**	t = 3.98 p<.01	2.27
4. Stone Academy	Primary	65	Mean = **9.40**	Mean = **14.49**	t = 11.46 p<.01	5.09
5. Washington Irving	Primary	51	Mean = **8.47**	Mean = **12.69**	t = 9.12 p<.01	4.22
6. Pyle MS	Primary	104	Mean = **11.54**	Mean = **15.37**	t = 11.31 p<.01	3.83
7. Cheyenne - Haws	Primary	21	Mean = **8.67**	Mean = **13.05**	t = 5.81 p<.01	4.38
8. Whitford MS	Primary	32	Mean = **8.75**	Mean = **12.59**	t = 6.11 p<.01	3.84

The average difference score for the primary schools was 3.73. Another way of visualizing the results of comparing the schools is depicted in Table 78. This table shows the results of the pretest for each primary school along with its posttest results.

Table 78. Another Comparison of Pretest and Posttest Scores



Section V. Discussion of Results

A. Field Test Demographics.

There inevitably is a conflict between the need for representative samples and the demands of the real world to identify and access willing teachers and students. In field tests, it is logical to identify teachers who are willing, capable, and have the laboratory resources to conduct the tests even though their classes might not yield representative samples. The goal of the evaluation is to test and evaluate new curriculum materials. What better set of subjects to test than those who can use it and articulate its advantages and disadvantages?

The primary field test sites were quite diverse. They varied in urban-suburban-rural, racial/ethnic composition, and geographic region of the U.S. The secondary sites were "opportunistic" in nature, that is, they were included because they applied not because they helped establish "inclusiveness" in any way. We intended to include them in the analyses and compare them to the primary groups to examine possible differences. The instructional module materials and evaluation forms were mailed to these schools but no evaluation materials were returned.

B. Formative Evaluation Results from Students.

Utility of Student Results for Developers. In general the results in Tables 3 to 18 are most useful to the developers to obtain the impressions of the students on the different areas of evaluation. The percentage results on all lessons are more dispersed and have more disagreement than the teachers' answers for similar questions. It is suggested that the developers review the separate tables for each lesson and focus on those with the most dispersed and lowest average scores to find room for

improvement. For example, in Lesson 2 (Table 8), the lowest average response from the students on the questions on Text-based Materials was the statement "The lesson made me think about new things and questions". The average was 4.24 which is in the *agree a little* range. This might be a candidate for improvement. Comparing the same average of responses to questions across the lessons will give you an idea of how well the different lessons were evaluated by the students.

Comments from Students. Appendix I contains the comments from the students on the Pre-Lesson and Lessons 1-5, the Most and Least Valuable Aspects of the Module, and Suggestions for Improvements. This is a large appendix with comments from 440 students. The Most Valuable Aspects of the Module included items such as the Dear Me, Munching Mice, using websites, learning how to avoid getting fat, learning about e-in and e-out. The Least Valuable Aspects of the Module included items such as Dear Me, Munching Mice, needing better instructions, and making me think. Suggestions for improvements included items such as more web activities, removing the Dear Me letters, and making it shorter. These items are only a sample of the many comments made by students. The developers should review the comments in each section to see the diversity and number of comments and to identify possible areas for change.

Comparison of Student Results on Lessons. Table 18 contains the results of calculating the averages for the various sets of questions on different evaluation dimensions: Text-based Content, Graphic Content, the Website. The Text-based Content and Graphic Content results are very similar for all the lessons.

Lesson and Overall Module Difficulty for Students. The results on the level of difficulty judgments by students suggests that even though they are all close to the *just right* mark that lesson 4 was perceived as the most difficult and lesson 2 as the easiest by the students.

C. Formative Evaluation Results from Teachers.

Utility of Teacher Results for Developers. Even a brief perusal of the results depicted in Tables 19-62 clearly shows that the results from the teachers are less dispersed and focused more in the *agree* range. The average for virtually all the questions was higher than the results for similar questions asked of the students. Again, the task for the developers in examining these tables is to focus on the low scores and most dispersed sets of responses to statements. In so doing, they should identify likely candidates for modifications and improvements in the materials.

Comments from Teachers. Appendix J contains the comments from the teachers on the Pre-Lesson and Lessons 1-5, the Most and Least Valuable Aspects of the Module, and Suggestions for Improvements. The Most Valuable Aspects of the Module included items such as the web activities, relevance to everyday life, presentation of scientific inquiry, and group activity. Least Valuable Aspects of the Module included items such as the length of the activities, requirement for more explanation and background material, and less repetition. Suggestions for improvements included items such as having approximate instruction times in the teacher materials, improving the website for delicate balance, engaging students more in the Pre-Lesson, and developing standard answers for teachers to "Questions from Students".. These items are only a sample of the many comments made by teachers. The developers should review the comments in each section to identify candidate areas for changes.

Comparison of Teacher Ratings on Lessons. Table 63 contains the results of calculating the averages for the various sets of questions on the different evaluation dimensions. Most of the results

are in the *agree* range on these items. However, the developer can identify strong and weak areas of lessons by comparing the lessons to each other, much as the teachers and students did. In this manner, the graphic content of lesson was evaluated lowest on the Pre-Lesson, the format on the Lesson 3 was evaluated lowest, and so forth. Interestingly, as opposed to the students, the teachers thought that the Pre-Lesson was the most difficult and Lesson 2 was the least difficult. It should be noted however, that all the difficulty score averages from the teachers were clustered around the "just right" score of 5.

Lesson and Overall Module Difficulty. Table 64 is a comparison of the results of the lessons' and overall module difficulty scores of the teachers and students. Interestingly, the teachers evaluated all the lessons as more difficult than the students, however, on the overall module the students rated it more difficult than the teachers.

Teacher Background Materials. The questions asking for evaluation information on the Teacher Background Materials yielded positive results. The results in Table 71 suggest that the materials were useful and the references useful. However, there was disagreement by the teachers on whether the references should be in the text of the Background materials. Comments on the best features included standards correlation, refreshing their memory, and easy reading. The teachers wanted access to other food pyramids and a BMI worksheet for students.

D. Summative Evaluation Results.

Student Knowledge Surveys. The results from the student knowledge surveys clearly showed that the module had the intended instructional impact. The results are conclusive on all lessons.

Teacher Judgment on Effectiveness in Achieving Learning Outcomes. We also obtained the additional input of summative data from the teachers on achieving the learning outcomes for the various lessons. These results, in Table 76, clearly support the student knowledge survey results. The module was a summative success.

Section VI. Conclusions and Recommendations

A. Conclusions

The formative evaluation of the Energy Balance Module Materials clearly shows that the module has been very well crafted and most of the modifications will be of a fine-tuning nature not an overhaul. The open-ended responses yielded a mixed set of comments about what the students and teachers liked and disliked. The response clusters should be examined by the developers and overlaid with the results of the site visits by staff to obtain most likely areas for improvement to the module.

The summative evaluation results suggest that the module was very effective in all lessons and yielded statistically significant changes in scores from pretest to posttest results as well as high judgments by teachers of the effectiveness in achieving learning outcomes.

B. Recommendations Regarding the Project

Primary versus Secondary Teachers and Sites. It would be useful in future applications to have more secondary sites to compare results. If the project director were to pay the secondary teachers a nominal fee of perhaps $50.00 to return the evaluation materials it might substantially increase the return rate for these materials. This is useful because the comparison between these two types of sites gives us insight into whether the professional development offered in the field test orientation to the primary teachers really is necessary to effectively use the materials.

Time for Evaluation Data Entry and Analysis. The Energy Balance module was used in February - March of 2002 with the evaluation materials returned to BSCS in March. After receipt of the questionnaires the data entry was begun. The inclusion of the secondary groups increased the data entry and analysis task. The evaluation reports for this module as well as the Using Technology and The Brain modules all have due dates of 1 May 2002. It is recommended that on future proposals more time be allocated to the evaluation data entry and analysis for review, contemplation of results, and report writing.

Pilot Test Formative Evaluation. It is recommended that a local pilot test be included in future proposals and that early formative data gathered be included in modifications to the module materials.

Access by Persons with Disabilities (PWDs). It is recommended that we create curriculum materials, in all their various forms, in ways that allows access by persons with disabilities (PWDs). One of the populations of American society which will benefit greatly from technological advances in computers, CD-ROMs, DVDs, websites and internet access in general are persons with disabilities. The Americans with Disabilities Act (ADA) was passed in 1993 and sets standards and mechanisms for access for PWDs. The Department of Education has a number of agencies working to improve access by PWDs such as the National Institute on Disability and Rehabilitation Research (NIDRR). Also, Congress passed the Workforce Investment Act in 1998 which mandates changes in software and peripheral devices to allow access by PWDs.

We should consider enabling access to our curriculum materials by PWDs and including the cost and time of doing so in our proposals. The modifications are somewhat different for different types of disabilities and often depend on unique technology which the PWD has at their location (such as software on their computer which enlarges text for visually impaired persons). The software for websites can be written in such a fashion as to enable the use of the different input and output devices used by PWDs. Usually, websites are not so constructed. The nonprofit Center for Applied Special Technology (CAST) has procedures to follow to do this and subsequently receive their "Bobby-Approved" status. This approval indicates to the disabled community that certain standards have been met and they will likely have no trouble accessing the site <www.cast.org>.
These types of innovations in our curriculum materials, whether stand alone, such as a CD-ROM, or installed and accessible at our website, would make the materials available to a much wider audience.

REFERENCES

Campbell, Donald and Stanley, Julian. 1963. Experimental and Quasi-Experimental Designs for Research. Chicago. Rand McNally.

Flesch & Kincaid, DoD Mil-M-38784B

Gillis, Lynette. 2000. Quality Standards for Evaluating Multimedia and Online Training. Toronto. McGraw-Hill Ryerson.

Gunning, Robert. 1952. The Technique of Clear Writing. McGraw-Hill.

Likert, Rensis. 1932. "A Technique for the Measurement of Attitude Scales". Archives of Psychology, No. 140.

McLaughlin, H. 1969. " 'SMOG' grading – a new readability formula". Journal of Reading, 22, 639-646.

Appendix A

NIH4 The Science of Energy Balance: Nutrition & Physical Activity
Advisory Board Meeting Evaluation

Please provide anonymous feedback for us to modify or improve our activities surrounding the advisory board meeting in which you have just participated. Your input is greatly appreciated. Please feel free to make comments on any question or add anything you wish.

1. Please put a check mark next to your role as a participant in the conference:
   Teacher_____ Other_____ please specify_____
   Scientist_____

Facilities

Please rate the following on the scale provided from *Very Poor* to *Excellent*:

						Comments
2. Meeting Rooms	Very Poor	Poor	Fair	Good	Excellent	
3. Hotel Rooms	Very Poor	Poor	Fair	Good	Excellent	
4. Food	Very Poor	Poor	Fair	Good	Excellent	

Activities

5. Was the structure of the advisory board activities clearly presented?
   Yes ____ No____

6. Was the Friday morning orientation to contructivism and the 5E model useful in your task on the advisory board?
   Yes_____ No____

7. Were you able to complete your advisory board task(s)?
   Yes_____ No_____

8. Were there any areas of expertise not represented on the Advisory Board which you think would have been useful in your work?
   Yes_____ No_____

9. Did you have sufficient resources to do your work?
   Yes_____ No_____ If No, what would have been useful to you?

10. Are there any other resources, processes, or information which would have assisted in your deliberations on Friday and Saturday?
    Yes_____ No_____ If Yes, please specify.

11. Please list the three things you ***liked most*** about the advisory board meeting.

12. Please list the three things you ***liked least*** about the advisory board meeting.

Appendix B

NIH4 Energy Balance Design Conference Evaluation

Please provide feedback for us to modify or improve our activities surrounding the design conference in which you have just participated. Please feel free to make comments on any question. Your input is greatly appreciated.

1. Please put a check mark next to your role as a participant in the conference:
   Teacher_____ Other_____ please specify_____
   Scientist_____

2. (OPTIONAL) Please tell us the name of your writing team:_____

Conference Facilities

Please rate the following on the scale provided from *Very Poor* to *Excellent*:

						Comments
3. Meeting Rooms	Very Poor	Poor	Fair	Good	Excellent	
4. Hotel Rooms	Very Poor	Poor	Fair	Good	Excellent	
5. Food	Very Poor	Poor	Fair	Good	Excellent	

Conference Activities

6. The structure of the writing activities was clearly presented.
   Yes ____ No____

7. The process of team writing worked well.
   Yes_____ No_____

8. Was your team able to complete it's writing task?
   Yes_____ No____

9. Did your team have enough time to complete it's writing task?
   Yes_____ No_____

10. Were all team members to participate in the design process?
    Yes_____ No_____

11. Did your team have the resources you needed to complete your task(s)?
    Yes_____ No_____

12. What additional resources would have been of value?

13. Please list the three things you ***liked most*** about the design conference.

14. Please list the three things you ***liked least*** about the design conference.

Appendix C

The Science of Energy Balance: Nutrition and Physical Activity Module

Survey Instructions for the Teacher

1. There are four surveys:

    - Student Knowledge Survey 1,
    - Student Knowledge Survey 2,
    - Student Evaluation of the Module Survey, and
    - the Teacher Evaluation of the Module Survey.

2. Please administer the Student Knowledge Survey 1 BEFORE using the Module.

3. Administer the Student Knowledge Survey 2 and the Student Evaluation of the Module Survey AFTER using the module.

4. Complete your survey AFTER you have used the materials.

5. Please feel free to make any comments you wish. The more input we get at this stage in the development of the modules, the better the modules will be.

Thanks for testing our materials. These preliminary tests are absolutely essential to developing good curriculum materials. Your assistance is greatly appreciated!

Appendix D

Teacher Survey

The Science of Energy Balance: Nutrition and Physical Activity

Instructions: Please complete this brief survey on the BSCS Module on The Science of Energy Balance AFTER you have used the materials. This survey will help the project developers make this a better science unit. Thanks!

1. Name_____ 2. School_____

3. Information on classes in which you are using the module.

CLASS	NAME OF CLASS	GRADE LEVEL	NUMBER OF STUDENTS	TYPE OF CLASS (REG,AP,HONORS)	INSTRUCTIONAL SETTING (LAB, REG CLASSRM, # OF TEACHERS, AIDES)
1					
2					
3					
4					
5					

4. Approximate Gender Composition of all classes:
Male _____%
Female_____%

5. Approximate Race/Ethnicity Composition for all classes: (categories used by US Census Bureau and reported to the funding agency, the National Institutes of Health, to assure inclusion of all groups in the study):
Asian_____%
African American_____%
American Indian or Alaska Native_____%
White_____%
Native Hawaiian or Other Pacific Islander_____%
Some other race/ethnicity (e.g., Hispanic or Latino/Latina)_____%
Two or more races_____%

6. Describe your plan for using the materials:

7. Total number of class periods each Lesson was used? Lesson 1_____ Lesson 2_____ Lesson 3_____
Lesson 4_____ Lesson 5_____

8. Any other relevant information about the use of the materials that could inform the developers?

Pre-Lesson: *PHYSICAL ACTIVITY DIARY*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The content was accurate and current.								
2. The reading level was appropriate for my students.								
3. The vocabulary was listed separately in a useful glossary.								
4. The material stimulated new thinking and inquiry.								
5. The examples and explanations were at the appropriate level.								
6. The material was engaging (i.e. the students got more interested in the science content).								
7. The students could understand the scientific information clearly.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Illustrations, charts, maps, or graphs were clear and meaningful.								
2. Graphic content helped students understand the								

material covered.								
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.								
4. Illustrations motivated students to read the text.								
5. The material was engaging (i.e. it got them to do interesting things).								

C. FORMAT of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson contained an appropriate amount of material.								
2. The size and format of print was appropriate.								

D. ORGANIZATION of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The organization of the lesson (chronological, thematic) facilitated the development of specific skills identified in the lesson goals/objectives.								
2. Main concepts were presented								

logically.								
3. The information was presented in a sequence at an age appropriate pace.								

E. INSTRUCTIONAL DESIGN of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The amount of prerequisite knowledge required to understand the material was acceptable.								
2. The learning objectives were stated clearly.								
3. The instruction followed an inquiry-based approach.								

F. RELEVANCE of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Materials and concepts were related to real life examples.								
2. Module materials and concepts fit nicely with my existing instructional materials.								

G. EFFECTIVENESS in ACHIEVING LEARNING OUTCOMES

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	VERY INEFFECTIVE	INEFFECTIVE	MODERATELY INEFFECTIVE	MODERATELY EFFECTIVE	EFFECTIVE	VERY EFFECTIVE	N / A	COMMENTS

1. Students should have increased knowledge of how they spend their time.								
2. Students should knowledge of and be able to evaluate their physical activity level.								
3. Students should recognize that activity levels vary from day to day and between individuals.								

H. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								
2. The students were able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

I. The difficulty level of the Pre Lesson was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 1: *BURNING IT UP*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The content was accurate and current.								
2. The reading level was appropriate for my students.								
3. The vocabulary was listed separately in a useful glossary.								
4. The material stimulated new thinking and inquiry.								
5. The examples and explanations were at the appropriate level.								
6. The material was engaging (i.e. the students got more interested in the science content).								
7. The students could understand the scientific information clearly.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Illustrations, charts, maps, or graphs were clear and meaningful.								
2. Graphic content helped students understand the material covered.								
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.								
4. Illustrations motivated students								

to read the text.								
5. The material was engaging (i.e. it got them to do interesting things).								

C. FORMAT of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson contained an appropriate amount of material.								
2. The size and format of print was appropriate.								

D. ORGANIZATION of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The organization of the lesson (chronological, thematic) facilitated the development of specific skills identified in the lesson goals/objectives.								
2. Main concepts were presented logically.								
3. The information was presented in a sequence at an age appropriate pace.								

E. INSTRUCTIONAL DESIGN of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The amount of prerequisite knowledge required to understand the material was acceptable.								
2. The learning objectives were stated clearly.								
3. The instruction followed an inquiry-based approach.								

F. RELEVANCE of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Materials and concepts were related to real life examples.								
2. Module materials and concepts fit nicely with my existing instructional materials.								

G. EFFECTIVENESS in ACHIEVING LEARNING OUTCOMES

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	VERY INEFFECTIVE	INEFFECTIVE	MODERATELY INEFFECTIVE	MODERATELY EFFECTIVE	EFFECTIVE	VERY EFFECTIVE	N / A	COMMENTS
1. Students should be able to describe ways humans use energy.								
2. Students should be able to describe Basal Metabolic Rate and its role in survival.								

3. Students should be able to estimate their total daily Calorie requirements based on a diary of individual activity.								
4. Students should be able to write at least one testable hypothesis dealing with energy use.								
5. Students should be able to describe the data required to test each hypothesis.								

H. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								
2. The students were able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

I. The difficulty level of lesson 1 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 2: *A SERVING BY ANY OTHER NAME*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The content was accurate and current.								
2. The reading level was appropriate for my students.								
3. The vocabulary was listed separately in a useful glossary.								
4. The material stimulated new thinking and inquiry.								
5. The examples and explanations were at the appropriate level.								
6. The material was engaging (i.e. the students got more interested in the science content).								
7. The students could understand the scientific information clearly.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Illustrations, charts, maps, or graphs were clear and meaningful.								
2. Graphic content helped students understand the material covered.								
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.								
4. Illustrations motivated students								

to read the text.								
5. The material was engaging (i.e. it got them to do interesting things).								

C. FORMAT of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson contained an appropriate amount of material.								
2. The size and format of print was appropriate.								

D. ORGANIZATION of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The organization of the lesson (chronological, thematic) facilitated the development of specific skills identified in the lesson goals/objectives.								
2. Main concepts were presented logically.								
3. The information was presented in a sequence at an age appropriate pace.								

E. INSTRUCTIONAL DESIGN of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The amount of prerequisite knowledge required to understand the material was acceptable.								
2. The learning objectives were stated clearly.								
3. The instruction followed an inquiry-based approach.								

F. RELEVANCE of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Materials and concepts were related to real life examples.								
2. Module materials and concepts fit nicely with my existing instructional materials.								

G. EFFECTIVENESS in ACHIEVING LEARNING OUTCOMES

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	VERY INEFFECTIVE	INEFFECTIVE	MODERATELY INEFFECTIVE	MODERATELY EFFECTIVE	EFFECTIVE	VERY EFFECTIVE	N / A	COMMENTS
1. Students should understand that their energy input comes from consuming food.								
2. Students should recognize that food labels contain useful information								

about kinds of nutrient and Calorie content of food.								
3. Students should become more aware of serving size.								

H. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								
2. The students were able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

I. The difficulty level of lesson 2 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 3: *A DELICATE BALANCE*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The content was accurate and current.								
2. The reading level was appropriate for my students.								
3. The vocabulary was listed separately in a useful glossary.								
4. The material stimulated new thinking and inquiry.								
5. The examples and explanations were at the appropriate level.								
6. The material was engaging (i.e. the students got more interested in the science content).								
7. The students could understand the scientific information clearly.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Illustrations, charts, maps, or graphs were clear and meaningful.								
2. Graphic content helped students understand the material covered.								
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.								
4. Illustrations motivated students to read the text.								
5. The material was engaging (i.e. it got								

them to do interesting things).								

C. FORMAT of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson contained an appropriate amount of material.								
2. The size and format of print was appropriate.								

D. ORGANIZATION of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The organization of the lesson (chronological, thematic) facilitated the development of specific skills identified in the lesson goals/objectives.								
2. Main concepts were presented logically.								
3. The information was presented in a sequence at an age appropriate pace.								

E. INSTRUCTIONAL DESIGN of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The amount of prerequisite knowledge required to understand the material was acceptable.								
2. The learning objectives were stated clearly.								
3. The instruction followed an inquiry-based approach.								

F. RELEVANCE of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Materials and concepts were related to real life examples.								
2. Module materials and concepts fit nicely with my existing instructional materials.								

G. EFFECTIVENESS in ACHIEVING LEARNING OUTCOMES

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	VERY INEFFECTIVE	INEFFECTIVE	MODERATELY INEFFECTIVE	MODERATELY EFFECTIVE	EFFECTIVE	VERY EFFECTIVE	N / A	COMMENTS
1. Students should be able to calculate Calorie intake from grams of								

carbohydrate, protein, and fat.								
2. Students should be able to calculate Calorie expenditures from physical activities.								
3. Students should be able to describe the relationship of energy balance to weight loss, maintenance, and gain.								
4. Students should be able to describe the energy balance for adolescents and teenagers.								
5. Students should be able to develop energy input/output strategies that allow for healthy weight for adolescents and teenagers.								

H. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								
2. The students were able to navigate easily in the website without confusion.								
3. The website made the								

lesson more understandable.								
4. The website made the lesson more interesting.								

I. The difficulty level of lesson 3 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 4: *MUNCHING MICE*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The content was accurate and current.								
2. The reading level was appropriate for my students.								
3. The vocabulary was listed separately in a useful glossary.								
4. The material stimulated new thinking and inquiry.								
5. The examples and explanations were at the appropriate level.								
6. The material was engaging (i.e. the students got more interested in the science content).								
7. The students could understand the scientific information clearly.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Illustrations, charts, maps, or graphs were clear and meaningful.								
2. Graphic content helped students understand the material covered.								
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.								
4. Illustrations motivated students								

to read the text.								
5. The material was engaging (i.e. it got them to do interesting things).								

C. FORMAT of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson contained an appropriate amount of material.								
2. The size and format of print was appropriate.								

D. ORGANIZATION of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The organization of the lesson (chronological, thematic) facilitated the development of specific skills identified in the lesson goals/objectives.								
2. Main concepts were presented logically.								
3. The information was presented in a sequence at an age appropriate pace.								

E. INSTRUCTIONAL DESIGN of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The amount of prerequisite knowledge required to understand the material was acceptable.								
2. The learning objectives were stated clearly.								
3. The instruction followed an inquiry-based approach.								

F. RELEVANCE of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Materials and concepts were related to real life examples.								
2. Module materials and concepts fit nicely with my existing instructional materials.								

G. EFFECTIVENESS in ACHIEVING LEARNING OUTCOMES

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	VERY INEFFECTIVE	INEFFECTIVE	MODERATELY INEFFECTIVE	MODERATELY EFFECTIVE	EFFECTIVE	VERY EFFECTIVE	N / A	COMMENTS
1. Students should recognize that in a general population there will be differences in the state of energy								

balance.								
2. Students should be able to identify factors that contribute to differences in energy balance.								
3. Students should recognize that there is a genetic component involved in energy balance.								
4. Students should understand that increased availability of food affects energy balance and causes weight gain.								
5. Students should understand that increased activity can affect energy balance and weight gain.								
6. Students should be able to describe the relationship between energy consumption, energy use, and weight gain.								

H. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								
2. The students were able to navigate easily in the website without confusion.								

3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

I. The difficulty level of lesson 4 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 5: *DEAR ME*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The content was accurate and current.								
2. The reading level was appropriate for my students.								
3. The vocabulary was listed separately in a useful glossary.								
4. The material stimulated new thinking and inquiry.								
5. The examples and explanations were at the appropriate level.								
6. The material was engaging (i.e. the students got more interested in the science content).								
7. The students could understand the scientific information clearly.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Illustrations, charts, maps, or graphs were clear and meaningful.								
2. Graphic content helped students understand the material covered.								
3. Illustrations promoted student thinking, discussion, problem solving, and inquiry.								
4. Illustrations motivated students								

to read the text.								
5. The material was engaging (i.e. it got them to do interesting things).								

C. FORMAT of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson contained an appropriate amount of material.								
2. The size and format of print was appropriate.								

D. ORGANIZATION of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The organization of the lesson (chronological, thematic) facilitated the development of specific skills identified in the lesson goals/objectives.								
2. Main concepts were presented logically.								
3. The information was presented in a sequence at an age appropriate pace.								

E. INSTRUCTIONAL DESIGN of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The amount of prerequisite knowledge required to understand the material was acceptable.								
2. The learning objectives were stated clearly.								
3. The instruction followed an inquiry-based approach.								

F. RELEVANCE of TEXT-BASED MATERIAL

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. Materials and concepts were related to real life examples.								
2. Module materials and concepts fit nicely with my existing instructional materials.								

G. EFFECTIVENESS in ACHIEVING LEARNING OUTCOMES

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	VERY INEFFECTIVE	INEFFECTIVE	MODERATELY INEFFECTIVE	MODERATELY EFFECTIVE	EFFECTIVE	VERY EFFECTIVE	N / A	COMMENTS
1. Students should be able to define E_{in} and E_{out}.								
2. Students should be able to explain why the best energy balance for children, adolescents, and								

teenagers differs from the best energy balance for adults.								
3. Students should be able to describe appropriate strategies for adults to maintain energy balance.								

H. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								
2. The students were able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

I. The difficulty level of lesson 5 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

The following questions pertain to the entire module as a whole.

The difficulty level of the module as a whole was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Overall, what were the three most valuable aspects of the module and why?

Overall, what were the three least valuable aspects of the module and why?

What specific suggestions would you make to the developers to improve this module?

Thanks for your help!

Appendix E

Student Survey

The Science of Energy Balance: Nutrition and Physical Activity

Student Knowledge Survey 1

Instructions: Please complete this brief survey of knowledge BEFORE using the BSCS Module on The Science of Energy Balance: Nutrition and Physical Activity. This survey will help your teachers and the project developers make this a better science unit. Thanks!

Your Identification Number for the study:_____
(The 1st initial of your last name and the last 4 digits of your social security number, for example, Rosita McGillicuty,
SSN=123-45-6789 would be: M6789)

True	False	Not Sure	
T	**F**	**NS**	1. A calorie is a measure of energy.
T	**F**	**NS**	2. A calorie is an amount of a substance in grams.
T	**F**	**NS**	3. A calorie is a nutrient, like proteins and fats.
T	**F**	**NS**	4. The total energy you use for physical activities includes BMR.
T	**F**	**NS**	5. The total energy you use for physical activities depends only on how intense the activity is, not how long you do it.
T	**F**	**NS**	6. The total energy used for physical activities depends on the individual's gender, weight, and age.
T	**F**	**NS**	7. Energy our bodies can use comes from the foods we eat.
T	**F**	**NS**	8. Serving size of a food depends on the size of the plate or bowl.
T	**F**	**NS**	9. Serving size is defined as how much of a food you put on your plate.
T	**F**	**NS**	10. Food labels tell us only about how much protein, carbohydrate, and fat the food contains.
T	**F**	**NS**	11. Foods of the same type contain the same number of Calories.
T	**F**	**NS**	12. Proteins, carbohydrates, and fats all contain the same number of calories per gram.
T	**F**	**NS**	13. Adolescents and teenagers should be in positive energy balance.
T	**F**	**NS**	14. Adolescents and teenagers should be in energy balance.
T	**F**	**NS**	15. Energy balance means that calories obtained from food equal calories used for physical activities and basic metabolic needs.

T **F** **NS** 16. Adolescents and teenagers need more calories than those that are required for physical activities.

T **F** **NS** 17. Energy balance should be evaluated on a daily basis.

T **F** **NS** 18. Factors affecting energy balance include genetics and food availability.

T **F** **NS** 19. Energy balance can vary in young individuals, although it does not vary in older individuals.

T **F** **NS** 20. There is nothing you can do to change your energy balance, since it is determined by genetics.

T **F** **NS** 21. Physical activity affects my health, not my energy balance.

Appendix F

Student Survey

The Science of Energy Balance: Nutrition and Physical Activity

Student Knowledge Survey 2

Instructions: Please complete this brief survey of knowledge AFTER using the BSCS Module on The Science of Energy Balance: Nutrition and Physical Activity. This survey will help your teachers and the project developers make this a better science unit. Thanks!

Your Identification Number for the study:_____
(The 1st initial of your last name and the last 4 digits of your social security number, for example, Rosita McGillicuty,
SSN=123-45-6789 would be: M6789)

True	False	Not Sure	
T	**F**	**NS**	1. A calorie is a measure of energy.
T	**F**	**NS**	2. A calorie is an amount of a substance in grams.
T	**F**	**NS**	3. A calorie is a nutrient, like proteins and fats.
T	**F**	**NS**	4. The total energy you use for physical activities includes BMR.
T	**F**	**NS**	5. The total energy you use for physical activities depends only on how intense the activity is, not how long you do it.
T	**F**	**NS**	6. The total energy used for physical activities depends on the individual's gender, weight, and age.
T	**F**	**NS**	7. Energy our bodies can use comes from the foods we eat.
T	**F**	**NS**	8. Serving size of a food depends on the size of the plate or bowl.
T	**F**	**NS**	9. Serving size is defined as how much of a food you put on your plate.
T	**F**	**NS**	10. Food labels tell us only about how much protein, carbohydrate, and fat the food contains.
T	**F**	**NS**	11. Foods of the same type contain the same number of Calories.
T	**F**	**NS**	12. Proteins, carbohydrates, and fats all contain the same number of calories per gram.
T	**F**	**NS**	13. Adolescents and teenagers should be in positive energy balance.
T	**F**	**NS**	14. Adolescents and teenagers should be in energy balance.
T	**F**	**NS**	15. Energy balance means that calories obtained from food equal calories used for physical activities and basic metabolic needs.

T **F** **NS** 16. Adolescents and teenagers need more calories than those that are required for physical activities.

T **F** **NS** 17. Energy balance should be evaluated on a daily basis.

T **F** **NS** 18. Factors affecting energy balance include genetics and food availability.

T **F** **NS** 19. Energy balance can vary in young individuals, although it does not vary in older individuals.

T **F** **NS** 20. There is nothing you can do to change your energy balance, since it is determined by genetics.

T **F** **NS** 21. Physical activity affects my health, not my energy balance.

Appendix G

Student Survey

The Science of Energy Balance: Nutrition and Physical Activity

Student Evaluation of the Module

Instructions: Please complete this brief survey on the BSCS Module on The Science of Energy Balance: Nutrition and Physical Activity. This survey will help your teachers and the project developers make this a better science unit. Thanks!

Your Identification Number for the study:_____
(The 1st initial of your last name and the last 4 digits of your social security number, for example, Rosita McGillicuty,
SSN=123-45-6789 would be: M6789)

Demographic Information:
(reported to the funding agency, the National Institutes of Health, to assure inclusion of all groups in the study)

1. Gender:
_____Female ____Male

2. Race/Ethnicity (check one) **(categories used by US Census Bureau):**
_____Asian _____African American _____American Indian or Alaska Native _____White
_____Native Hawaiian or Other Pacific Islander _____Some other race/ethnicity (e.g., Hispanic or Latino/Latina)
_____Two or more races

3. What is your grade level in school? _____6th _____7th _____8th_____9th _____10th _____11th _____12th

Please circle a number to indicate your level of agreement with these statements.

4. I am very interested in science, in general.

1	2	3	4	5	6
Strongly Disagree	Disagree	Moderately Disagree	Moderately Agree	Agree	Strongly Agree

5. I am very interested in Biology.

1	2	3	4	5	6
Strongly Disagree	Disagree	Moderately Disagree	Moderately Agree	Agree	Strongly Agree

6. I am good at science, in general.

1	2	3	4	5	6
Strongly Disagree	Disagree	Moderately Disagree	Moderately Agree	Agree	Strongly Agree

Pre-Lesson: *PHYSICAL ACTIVITY DIARY*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson was interesting.								
2. I could understand the examples and explanations.								
3. The lesson made me think about new things and questions.								
4. I could read the material easily.								
5. I understood the scientific information clearly.								
6. The material and concepts were related to real life examples.								
7. The materials and concepts fit nicely with the other material in this course.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The graphic content helped me understand the materail covered.								
2. The illustrations promoted discussion.								
3. The illustrations promoted thinking and questioning.								
4. The illustrations motivated me to read the text.								

C. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								

2. I was able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

D. The difficulty level of the Pre Lesson was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 1: *BURNING IT UP*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson was interesting.								
2. I could understand the examples and explanations.								
3. The lesson made me think about new things and questions.								
4. I could read the material easily.								
5. I understood the scientific information clearly.								
6. The material and concepts were related to real life examples.								
7. The materials and concepts fit nicely with the other material in this course.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The graphic content helped me understand the materail covered.								
2. The illustrations promoted discussion.								
3. The illustrations promoted thinking and questioning.								
4. The illustrations motivated me to read the text.								

C. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								

2. I was able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

D. The difficulty level of lesson 1 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 2: *A SERVING BY ANY OTHER NAME*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson was interesting.								
2. I could understand the examples and explanations.								
3. The lesson made me think about new things and questions.								
4. I could read the material easily.								
5. I understood the scientific information clearly.								
6. The material and concepts were related to real life examples.								
7. The materials and concepts fit nicely with the other material in this course.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The graphic content helped me understand the materail covered.								
2. The illustrations promoted discussion.								
3. The illustrations promoted thinking and questioning.								
4. The illustrations motivated me to read the text.								

C. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								

2. I was able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

D. The difficulty level of lesson 2 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 3: *A DELICATE BALANCE*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson was interesting.								
2. I could understand the examples and explanations.								
3. The lesson made me think about new things and questions.								
4. I could read the material easily.								
5. I understood the scientific information clearly.								
6. The material and concepts were related to real life examples.								
7. The materials and concepts fit nicely with the other material in this course.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The graphic content helped me understand the materail covered.								
2. The illustrations promoted discussion.								
3. The illustrations promoted thinking and questioning.								
4. The illustrations motivated me to read the text.								

C. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								

2. I was able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

D. The difficulty level of lesson 3 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 4: *MUNCHING MICE*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson was interesting.								
2. I could understand the examples and explanations.								
3. The lesson made me think about new things and questions.								
4. I could read the material easily.								
5. I understood the scientific information clearly.								
6. The material and concepts were related to real life examples.								
7. The materials and concepts fit nicely with the other material in this course.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The graphic content helped me understand the materail covered.								
2. The illustrations promoted discussion.								
3. The illustrations promoted thinking and questioning.								
4. The illustrations motivated me to read the text.								

C. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								

2. I was able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

D. The difficulty level of lesson 4 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Lesson 5: *DEAR ME*

A. TEXT-BASED CONTENT

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The lesson was interesting.								
2. I could understand the examples and explanations.								
3. The lesson made me think about new things and questions.								
4. I could read the material easily.								
5. I understood the scientific information clearly.								
6. The material and concepts were related to real life examples.								
7. The materials and concepts fit nicely with the other material in this course.								

B. GRAPHIC CONTENT of TEXT-BASED MATERIALS

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The graphic content helped me understand the materail covered.								
2. The illustrations promoted discussion.								
3. The illustrations promoted thinking and questioning.								
4. The illustrations motivated me to read the text.								

C. WEBSITE

Please rate the materials you used on the items below. Feel free to make any comments you wish and use the back of the form.

QUESTION	STRONGLY DISAGREE	DISAGREE	DISAGREE A LITTLE	AGREE A LITTLE	AGREE	STRONGLY AGREE	N/A	COMMENTS
1. The website was clearly connected to the lesson.								

2. I was able to navigate easily in the website without confusion.								
3. The website made the lesson more understandable.								
4. The website made the lesson more interesting.								

D. The difficulty level of lesson 5 was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

The following questions pertain to the entire module as a whole.

The difficulty level of the module as a whole was (circle a number):

|_____|

1 2 3 4 5 6 7 8 9

Extremely Easy — Just Right — Extremely Hard

Overall, what were the three most valuable aspects of the module and why?

Overall, what were the three least valuable aspects of the module and why?

What specific suggestions would you make to the developers to improve this module?